

## THE COLD CANVASS

By B. T. Umor

(Concluded from Page 1, Column 1) many prospects of the "economy argument" they saw with their own eyes just the other day.

To demonstrate the low cost of electric cooking, the girls wanted a meter that would show the cost of the cooking done during a cooking school class on a dial clock, marked off in cents and fractions of a cent.

The clock was built, and the girls decided to give it a trial in the company kitchen before a public display. So they hooked it up, and it started running—backwards. The more they cooked, the less it cost.

### Two Kinds of Medicine

If you are seriously concerned by the general trend of affairs and if your wife takes the Ladies' Home Journal, read the article "What the World Most Needs" by Dorothy Thompson on page 4 of the November issue.

If you enjoy a good laugh at other people's seriousness, read the report prepared for President Roosevelt by the experts of the Social Security Board. It worries about the epidemic of crackpot pension schemes now sweeping the country and says:

"The basic facts are simple—that if eight or 10 million elderly people are to be supported, they will have to be supported by those who work; that the money to provide pensions for the aged will have to come out of the national income; that the national income is the product of the nation's fields, factories, and mines, shaped by the labor of our heads and hands; and that this income can not be increased by taking a part of it from those who labor to give to others who produce nothing in return.

"The basic fallacy in all these plans is that they rest on the mistaken assumption that spending of the pensions would increase the speed with which money would circulate, and that this increased speed itself would raise the nation's purchasing power and increase the demand for goods and services.

"Pension plans cannot create new purchasing power. They can only divert it from the younger productive part of the population to the elderly."

Business men have been trying to explain those simple truths for a long time without much success.

Old B.T.U. is pinning his hopes of an eventual return to economic sanity on two principal forces:

(1) The religious revival, discussed by Dorothy Thompson and numerous other writers.

(2) The practical jokers, who are now busy thinking up bigger and better crackpot schemes to make the original New Deal economists look like a bunch of pikers.

### Nema Range Shipments In August Top 19,000

NEW YORK CITY—Shipments of 19,116 electric ranges were made to distributors and dealers in the United States during August by the 16 manufacturers reporting to National Electrical Manufacturers' Association, to bring the eight-month Nema total to 182,556 units, according to figures released by the Nema association.

Michigan topped all other states in August range sales as well as in sales for the first eight months of the year, with 2,108 units in August and 17,009 for the eight-month period. Ohio placed second in both divisions, with third-ranking Pennsylvania crowding hard on its heels.

Sales in the 10 top-ranking states for August and for the first three-quarters of the year follow:

State	August Sales	Eight-Month Sales
Michigan	2,108	17,009
Ohio	1,730	13,540
Pennsylvania	1,370	13,062
Illinois	1,045	11,171
New York	709	8,338
Wisconsin	1,100	8,107
Minnesota	906	7,380
Indiana	450	7,197
California	966	6,829
Washington	782	6,750

### Range Sales Chief



HARRY PARSONS

### Parsons Heads Kelvinator Range, Heater Sales

DETROIT—Appointment of Harry Parsons as sales manager of the Kelvinator range and water heater section has been announced by Henry W. Burritt, vice president in charge of sales of the Kelvinator division of Nash-Kelvinator Corp.

Mr. Parsons has had 20 years' experience in the merchandising of electric ranges and other appliances, according to Mr. Burritt, and will utilize his knowledge in extending the scope of Kelvinator's range and electric water heater merchandising activities.

Prior to joining the Kelvinator organization, Mr. Parsons served for seven years as vice president and general sales manager of Walker & Pratt Mfg. Co., Boston.

Through the preceding six years, he was vice president in charge of the electrical department of Landers, Frary & Clark, Inc., New Britain, Conn. He also spent 14 years in the utility business as a general manager and consulting engineer.

### Crosley Announces Plan On Trade-Ins For New York City

(Concluded from Page 1, Column 3) for two thirds of the price registered in a standard trade-in schedule.

Units other than Crosleys may be reconditioned by General Refrigerator Sales & Service Co. for \$20, or may be sold to this organization for one half of the listed trade-in price.

A 90-day warranty is offered with the rebuilt units, but only "reasonably operative" boxes will be accepted for reconditioning. One half of the pick-up cost of the old refrigerator will be borne by Crosley Distributing Co. and the other half by the dealer.

In announcing the experiment, Grant Layng of the distributorship told dealers that the proposition was entirely optional and assured them that they were not being forced into the reconditioned refrigerator business.

Announcement also was made that the series of special priced Shelvador refrigerators introduced early last summer would be continued over into the 1939 line, but with three of them at higher prices. None of these models is included in the trade-in plan, however.

Maximum trade-in allowances for the nine models included in the trade-in experiment are as follows:

Model	Size	List Price	Maximum Trade-In
STANDARD			
KB5	36	\$124.95	\$30
KB5	43	139.95	20
KB5	50	159.95	25
KB5	60	179.95	35
KB5	71	199.95	55
DELUXE			
KL5	43	154.95	20
KL5	61	209.75	50
1937 SPECIALS			
HB5	60	179.75	45
HB5	70	209.75	72

### New Conditioning Firm

HOUSTON, Tex.—The Rolloson-Keeland Co. has been organized here to engage in the sale of heating and air-conditioning systems.

### Stuart Pioneered Coal Merchandising Methods

(Concluded from Page 1, Column 2) "50-50" cooperative market newspaper campaign, as distinguished from the "50-50" individual campaign formerly used.

He also is said to have pioneered the sale of thermostats for damper control and fire plants through retail coal dealers, and inaugurated and conducted personally the industry's first series of dramatized conventions.

Prior to his association with Delaware, Lackawanna & Western, Mr. Stuart was with American Signs Corp., Kalamazoo, Mich., as national accounts sales manager.

He is a native of Baltimore.

### 28th N.R.D.G.A. Meeting To Be Held Jan. 16-20

NEW YORK CITY—Twenty-eighth annual convention of National Retail Dry Goods Association will be held at the Pennsylvania hotel here from Jan. 16 to 20, 1939, announces Lew Hahn, the association's general manager.

All divisions and groups of the association will participate in the convention, including controllers' congress, store management group, merchandising division, sales promotion division, credit management division, personnel group, bureau of smaller stores, traffic group, and delivery group.

### D'Arcy Heads Crosley's Private Brand Sales

(Concluded from Page 1, Column 1) department at the Detroit branch some 14 years ago, and later prepared the first commercial sales manual for this company. Still later he was named western utility manager for the Kelvinator organization.

He continued his activities in the utility field after transferring his allegiance to Westinghouse Electric & Mfg. Co., where he served as that company's first utilities sales manager. He later became engaged in similar work for Stewart-Warner Corp.

Joining Universal Cooler Corp., Mr. D'Arcy became central domestic regional sales manager. Two years ago he was named domestic sales manager of Universal, the position which he left to go with Crosley.

### Miles Opens Quarters As Range Consultant

CHICAGO—Pierre L. Miles, who recently resigned as electric range sales manager of the Kelvinator division of Nash-Kelvinator Corp., has opened his own office at 20 N. Wacker Drive here to do consultation, planning, and supervision work for manufacturers on electric range problems.

One of the pioneers in the electric range field, Mr. Miles had a long association with Hotpoint before his later activities with Kelvinator.

### O'Harra, Zimmerman Are Promoted By Norge

(Concluded from Page 1, Column 4) president of the Norge division of Borg-Warner Corp. and executive vice president of the parent organization.

In his new position, Mr. O'Harra will direct the entire sales activity of the Norge division. Associated with Norge since 1930, when he came from United States Rubber Co., where he had been general sales manager of the G & T Tire Co., Mr. O'Harra was instrumental in the establishment of Norge Corp. of New York as a factory branch.

He directed the sales activities of Norge in the eastern part of the country until 1935, when he was brought to Detroit as vice president and general sales manager of Detroit Vapor Stove division of Borg-Warner. In this capacity, he also served as sales manager of the Norge range division.

A few months ago, Mr. O'Harra again was made sales manager of the eastern territory, his headquarters remaining in Detroit. He has been in close association with Norge distributors and dealers during the past eight years.

Mr. Zimmerman, who has been vice president in charge of sales for the past year, becomes assistant to Mr. Blood. In this post, he will have an important part in the further development of Norge plans which are under way for the future, Mr. Blood's announcement said.

## "USING NOTHING BUT VALVES

# Cut My Service 75%!"



Hussman-Ligonier Commercial Refrigerators-Refrigeration-Stelner Products

J. N. ROWSE  
202 N. PEARL ST.  
BALTIMORE, MD.

GENERAL OFFICES  
2401 N. LEFFINGWELL AVE.  
SAINT LOUIS, MO.

Oct. 10th, 1938.

Automatic Products Co.,  
Milwaukee, Wisconsin.

Gentlemen:-

The thought occurred to me that you might be interested in my experience with A. P. Thermo-static Expansion Valves.

I have tried every valve on the market and before I standardized on A. P., I had plenty of headaches and service but I can truthfully say that since using nothing but A. P. valves, I have cut my service 75% and it is very unusual that we are called upon to change one in any reasonable length of time.

I buy all my parts from Perks & Hull and your valve with their service really makes the refrigerator business a pleasure.

Sincerely yours,

JNR:RCK.

### Commercial Refrigerator Installation

By J. N. Rows, Baltimore, Md.  
Distributor for  
Allied Store Utilities Co.,  
Subsidiary of Hussman-Ligonier

### Refrigeration Unit —

Hussman-Ligonier

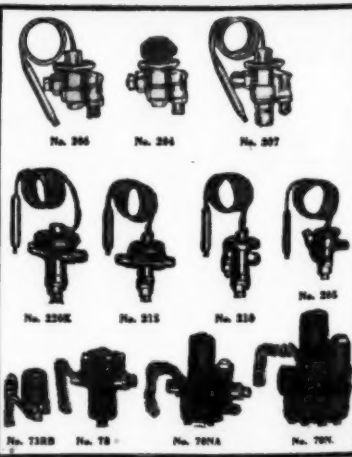
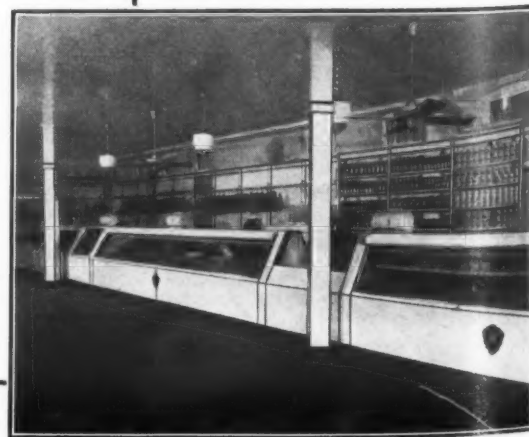
### Valves — Purchased Through

Perks & Hull Appliance Corp.  
Baltimore, Md.

### AUTOMATIC PRODUCTS COMPANY

2450 NORTH THIRTY-SECOND STREET  
MILWAUKEE WISCONSIN  
Export Department, 100 Varick Street, New York City

Refrigeration Parts Jobbers, who recognize Quality, Stock A-P Valves. . . And Refrigeration Service Engineers who appreciate the value of Dependable Service-free Installations USE ONLY A-P VALVES, and DEMAND them for every job.



## DEPENDABLE

THE BYWORD FOR A-P VALVES

# Air Conditioning & Refrigeration News

The Newspaper of the Industry

Trade Mark Registered U. S. Patent Office. Established 1926 as Electric Refrigeration News  
Member Audit Bureau of Circulations. Member Associated Business Papers.

Written to Be Read on Arrival

VOL. 25, No. 9, SERIAL NO. 502  
ISSUED EVERY WEDNESDAYEntered as second-class  
matter Aug. 1, 1927

DETROIT, MICHIGAN, NOVEMBER 2, 1938

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Business News Pub. Co.FOUR DOLLARS PER YEAR  
TWENTY CENTS PER COPY

## THE COLD CANVASS

By B. T. Umore

### Sugar Crick Sage

Zeke Carrithers, the Hoosier humorist who shows advertisers how they can use AIR CONDITIONING & REFRIGERATION NEWS to best advantage, is a product of storied Wabash College, and both by heritage and natural inclination belongs to the Sugar Crick school of philosophy.

Sugar Crick is that noble stream which laves the undulating shoreline of Crawfordsville, seat of Wabash College and cradle of America's closest-to-the-soil humorists.

There's Kenyon Nicholson (he has a brother, Meredith, who's a creditable novelist). Kenyon wrote "The Barker" and "Sailor Beware." George Ade lives down there in a fine old farmhouse.

Then there's Allen Saunders, who does the Big Chief Wahoo comic strip. And Bill Holman, who draws Smokey Stover, and made "foo" a national catch-word. Also Frank Beaven, Dave Gerard, and Bandel Linn. Screwballs all.

Most famous of all perhaps, is Don Herold, who comes from Bloomfield, and is an especial friend of Zeke's. Recently Don has turned his hand to writing and drawing advertisements for Mum. Mebbe you've seen them. Anyway, Don has coined a phrase for Mum's deodorizing service.

He calls it "Personal Air Conditioning."

Zeke threatens to sue, on behalf of an outraged industry.

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### Illegal Static

In the old days when the village newspaper failed to make its weekly appearance, often it was because the printer was in the hoosegow for making whoopee.

The other day a Detroit printer was haled into court for making static, in violation of a new ordinance governing radio interference.

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### Dictatorship Defined

In one of his movies, W. C. Fields complained: "Seems as though everything I like to do is either illegal, immoral, or fattening."

Which reminds us of the definition of a dictatorship recently reported by Walter Winchell.

In a dictatorship everything not prohibited is compulsory.

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Perhaps United States' national emblem, the bald eagle, got that way from worrying about our national debt.

## Milwaukee Food, Appliance Show Attracts 80,000

MILWAUKEE—Milwaukee's annual food and household appliance show, held at the Auditorium Oct. 17 to 22, attracted 81,090 persons and set one of the best attendance marks in the seven years the event was staged.

Under the joint sponsorship of the Wisconsin Radio, Refrigeration & Appliance Association and the Milwaukee Retail Grocers' Association, 19 dealers and distributors maintained household appliance exhibits at the show.

Howard Ashworth, secretary and manager of the appliance association; Gordon Fairfield of Morley-Murphy Co.; and Bert Johnson of Westinghouse Electric Supply Co., represented the appliance industry on the

(Concluded on Page 12, Column 3)

## I.T.&T. Will Handle Refrigerators In Branches Abroad

NEW YORK CITY—Manufacturing and sales companies of International Telephone & Telegraph Corp. abroad have entered the electric household refrigerator field as a result of a long-term contract arranged between International Standard Electric Corp., which manages the greater part of I. T. & T.'s manufacturing and sales activities throughout the world, and Gibson Refrigerator Co., Greenville, Mich.

Under this contract, International Standard Electric Corp. acquires sales and manufacturing rights in foreign countries to certain Gibson products, as well as technical advice and assistance to enable I. T. & T. factories to manufacture household refrigeration products in foreign countries under their own trade marks and trade names.

I. T. & T. has major factories in the principal countries of Europe, in Australia, in the Orient, and assembly plants, branches, or sales offices in most of the principal cities outside of the U.S.A. and Canada.

By I. T. & T., the arrangement is termed an important step in its policy of diversifying its line of manufactured products which heretofore has consisted of electrical communications apparatus and equipment for telephone, telegraph, radio, and cable operations for most of the government communications administrations and many of the private telephone and telegraph companies in all parts of the world.

## Kelvinator Shifts Men In Commercial Dept.

DETROIT—Several promotions in Kelvinator's commercial division have been announced by J. A. Harlan, manager. The shifts were effective Oct. 1, to coincide with the beginning of the company's 1939 fiscal year.

C. D. Taylor, formerly divisional manager of the southeastern sales territory, has been moved to Detroit as sales manager of Kelvinator's standard commercial and liquid cooling department. W. E. Watson continues in his post as assistant sales manager.

James A. Lee, formerly assistant sales manager of the air conditioning and automatic heating department, replaces Mr. Taylor in the southeastern area, headquarters of which have been moved from Atlanta to Baltimore, with the states of Maryland and Virginia added to the territory.

W. C. Mayfield, former divisional representative working out of the Cincinnati office, has been transferred to Detroit as assistant sales manager of the air conditioning and automatic heating department, to replace Mr. Lee.

Other changes include the transfer of E. T. Layport to Chicago as acting divisional manager for the

## Mrs. Jones Is Vice-Pres. Of Midwest Jobbers

DES MOINES, Iowa—At a recent meeting here of Midwest Refrigeration Supply Jobbers Association, Mrs. P. O. Jones, manager of United Supply Co., Omaha, Nebr., was elected to serve as vice president of the organization for the remainder of the year ending June 30, 1939.

This association, composed of jobbers located in Omaha, Des Moines, Sioux City, Iowa, Davenport, Iowa, Minneapolis, and Waterloo, Iowa, is headed by President C. W. Dennis of Dennis Refrigeration Co., Sioux City and Des Moines. E. L. Bengston, manager, refrigeration supply department, Republic Electric Co., Davenport, is secretary-treasurer.

## Dealer Shopping Plan Tightened By N. Y. Groups

### \$50 Fine, Contempt of Court Citation To Curb Known Price Violators

NEW YORK CITY—A new "shopping plan" to aid in more stringent enforcement of Feld-Crawford contracts now in existence is being employed by appliance dealers of Brooklyn and of Queens. Details of this plan were announced to dealers of both boroughs at recent meetings of the Brooklyn and Queens appliance dealers associations.

Under this plan, all complaints of price cutting in violation of Feld-Crawford contracts are reported in writing to Ted Bolger, shopping service head and executive secretary of the Brooklyn dealer group. After the shopping has been done, the returns are notarized and handed over to Mr. Bolger.

These reports of the shopping excursions are discussed each week by a special committee appointed for this purpose, all decisions being rendered before the name of the offending dealer is made known. Until the final decision is made, only Mr. Bolger is aware of the violators' identities.

As each decision is made, it is turned over, together with the report, to the distributor handling the line of radios on which the price contract was violated.

Dealers who do not have the reputation of being violent price cutters are offered a second chance, according to Percy Peters, chairman of the radio committee of the Brooklyn association, providing they consent to the signing of a voluntary injunction and the payment of a \$50 fine according to the distributor's contract. If the illegal sale has been made on a receiver listing for over \$100, the fine is upped to half of the list price. Second offenders are held for contempt of court.

Jules Smith, executive of the Davega-City radio chain, and Max Kassofer, executive of the Vim radio chain, have stated their organizations will back the new drive against price-cutting in the radio business.

Independents and chains, they pointed out, are now united in fighting a common evil. While strict observance of the terms of Feld-Crawford contracts will in some cases mean less business, they declared, it will, in the long run, mean better business.

## Salesmen Make Store's Monthly Collections; 5% Commissions Increase Their Income

NORTHAMPTON, Pa.—Adopting a compensation plan similar to that used by life insurance companies—that is, letting salesmen earn additional income by making collections as well as sales—has solved the problem of keeping salesmen satisfied and "in the money" for Luckenbach's Electrical Store here.

In past years Ralph Luckenbach, owner of the store, used the straight commission and salary and commission plans. But about two years ago, he got the idea that it might be possible to adopt a compensation plan similar to those used by insurance companies.

A study of methods used by insurance salesmen led Mr. Luckenbach to the belief that this type of man builds his clientele because he calls regularly on his customers, and that his customers in turn furnish him with many leads for new business.

"I couldn't see any reason why an appliance salesman couldn't follow the same method with success," he explained, "but in adapting this plan it became necessary to offer an

## New-Type Program Planned By A.S.R.E. For Dec. Meeting

NEW YORK CITY—Newest developments in air conditioning, industrial refrigeration, and commercial and food refrigeration will be the topics of the three main sessions of the thirty-fourth annual meeting of American Society of Refrigerating Engineers, to be held at the Hotel Commodore here Dec. 6, 7, and 8.

A new feature of this year's annual meeting will be the departmental conferences on the afternoon of Dec. 6, when quick freezing, humidity problems in air conditioning, and market research in refrigeration will be discussed informally in smaller groups, with general discussion in each case led by an authority on the subject.

Technical discussions proper are to be held only on the mornings of the convention's three days, with Tuesday afternoon assigned to the departmental conferences, and Wednesday and Thursday afternoons left free for inspection tours, visits to the Power Show, and American Society of Mechanical Engineers' sessions.

All technical sessions will be held in the west ballroom of the Commodore, and the welcome luncheon on Tuesday and annual dinner-dance on Wednesday in the east ballroom. Departmental conferences will be held on this same floor.

Watson Davis of Science Service, Washington, D. C., will be main speaker at the welcome luncheon.

Social program for the meeting includes a night club party on Tuesday night, and the Wednesday night

## Midwest Now Producing All-Porcelain Line

GALESBURG, Ill.—A line of "100% porcelain" refrigerated display cases is now in production at the plant of Midwest Mfg. Co., reports J. C. Battles, manager of refrigeration sales. First public announcement of the line is expected to be made sometime during November.

Production of the new line follows a series of extensive tests made by Midwest engineers over the past year's period, Mr. Battles says. Final laboratory "hot room" and actual operating tests are now being completed.

The new Midwest line will consist of 6, 8, 10, and 12-foot double-duty meat cases; 6, 8, and 10-foot double-

(Concluded on Page 12, Column 3)

## Predict Drastic Changes in '39 Domestic Units

### Return of Creative Selling Forecast In Address To Utility Men

FRENCH LICK SPRINGS, Ind.—A prediction that some refrigerator manufacturers may change their 1939 models so drastically "that there will be no question in the minds of customers as to their improvement over 1938 models" was made by W. H. Thompson, director of utility sales of Westinghouse Electric & Mfg. Co., in an address before the convention of Indiana Electric Association here recently.

Mr. Thompson also forecast that 1939 will see a return to constructive, creative selling in the field of refrigeration, rather than a continuation of the price-conscious order-taking that characterized 1938. Next year will also see a much better balance between inventories and sales than existed this year, he said.

Tracing the difficulties encountered in merchandising appliances, particu-

(Concluded on Page 16, Column 2)

## \$2,800 Sought In 'Breach Of Contract' Suit

LINCOLN, Neb.—A lawsuit involving an alleged breach of an exclusive sales agency contract on electric refrigerators is before the Supreme Court of the State of Nebraska.

Hymen Zelen, local distributor of electric refrigerators, brought the suit against Domestic Industries, Inc., manufacturer of the Buckeye refrigerator (no longer being manufactured), seeking to recover \$2,800 for the alleged breach of contract. The district court at Lincoln gave a directed verdict for the defendant.

Mr. Zelen contends that his contract privileged him to sell Buckeye electric refrigerators exclusively in

(Concluded on Page 16, Column 5)

## N. J. Court Throws Out Fair Trade Act

HACKENSACK, N. J.—New Jersey's so-called "Fair Sales Act," banning below-cost sale of all retail merchandise, was declared unconstitutional here Oct. 24 by Bergen County District Court Judge Berthold Vorsanger, in dismissing a complaint against Packard-Bamberger, Inc., operator of the Hackensack Food Market. The complaint was entered by Harry Lief, Newark, president of the Retail Grocers' Association of New Jersey.

In declaring the act unconstitutional, Judge Vorsanger said: "I feel that the right of the individual to fix his own prices cannot be infringed or denied except in certain cases falling in well defined limits, none of which are present here."

## Service Men's Society Meets This Week

BUFFALO—Practical discussions of such topics as dryers and drying agents, and the servicing of controls, hermetic units, ice cream cabinets, and beer dispensing units will occupy the attention of Refrigeration Service Engineers' Society members during their fifth annual convention, which opens in Hotel Statler here Nov. 2 for three days.

Several educational movies also are on the convention program, as well as a tube-bending contest.

## Specialty Selling Methods

### Development of the Modern Kitchen From Colonial Days Shown In Displays

NEW HAVEN, Conn.—The development of the modern kitchen from early Colonial days, when kitchen facilities consisted only of a large fireplace with a stone oven, to the present time, when all-electrical equipment is provided, was demonstrated recently by the United Illuminating Co. of this city in an exhibit at New Haven's Tercentenary Industrial Progress exposition.

More than 35,000 persons visited the company's display, which depicted four kitchens representing different periods from Colonial days to the present.

Each of the kitchens, in turn, represented a marked advance over the kitchens which they replaced, and the display proved particularly effective in demonstrating how completely outmoded today is the kitchen of yesterday.

First part of the exhibit was devoted to an early Colonial kitchen of the type common throughout New England prior to 1700. The fireplace, stone oven, pots, and kettles which hung from the crane, and oven utensils which hung from the mantle completed the Colonial housewife's kitchen equipment.

A wood stove replaced the open fireplace, whale oil lamps replaced the candles, and an iron pump stood beside the sink in the kitchen of the Civil War era. Although somewhat more convenient, this kitchen, on the whole, was far less cheerful than its predecessor.

The third step in the evolution was presented in the kitchen of the early 1900's. The gas range replaced the wood stove, a combination gas and electric lighting fixture replaced the earlier kerosene lamps, and an early type of kitchen cabinet made its appearance, as did an ice refrigerator. In this kitchen, hot water was supplied from a tall tank in the corner which was connected to a gas water heater. A washable floor marked the first advance over the wood floor of earlier days.

The 1938 kitchen, all-electric and designed in accordance with the principles recommended by Modern Kitchen Bureau, included all the basic facilities that complete electric equipment can provide, with an electric range, electric water heater, dishwasher, and refrigerator. Modern base and wall cabinets were installed, as well as the best types of lighting.

### Grocery Stores Make Good Display Rooms In Dealer's Drive

JOPLIN, Mo. — Figuring that housewives usually enter grocery stores in a "buying mood" and that they often have time to look around a bit while waiting for a clerk to put up a peck of potatoes or weigh up five pounds of apples, Empire District Electric Co., Frigidaire dealer here, recently conducted a sales promotion program in which it used neighborhood groceries as "display rooms" for its refrigerators.

In cooperation with a baking company and a cheese firm, the Empire company sent a full-time demonstrator into each cooperating grocery for a week at a time, together with the refrigerator which was to be exhibited.

Invitations announcing that the refrigerator was being demonstrated were sent out to families already on the customer list of each store and distributed among homes in the surrounding neighborhood. Housewives who came in to investigate were handed samples of the products manufactured by the cooperating cheese and bakery companies.

The produce companies benefited by the distribution of their products, the grocers benefited from the greatly increased floor traffic, and the appliance firm developed a long list of live prospects. This list was of special value, inasmuch as it could be checked with the grocer day by day to weed out the least desirable credit risks and to select the best prospects.

### Louisville Dealer Gives Two Reasons For Trade-In Clearance Sale In January

LOUISVILLE, Ky. — "Get up a little earlier in the morning, work a little later at night and keep hammering your story home with newspaper advertising."

That's the formula for licking hard times in the appliance business which is suggested and used by L. E. Leonhardt, manager of the refrigeration and radio department of Bensinger's large downtown furniture store here.

Mr. Leonhardt can speak with authority because his refrigeration business so far this year is running only 10% behind the comparable period in 1937, while his radio business is up 64% over last year.

Bensinger's appliance manager has a number of stimulating ideas about appliance merchandising, not the least of which is the plan he has for selling mechanical refrigerator trade-ins.

Old mechanical boxes which are taken in on a trade-in proposition should for the most part be held and sold in January, declares Mr. Leonhardt, for the following reasons:

#### HIS REASONS

1. It is "between lines" times, just before the new models are introduced to the public, when the salesman needs merchandise to sell and isn't very busy.

2. The units on some of the old units run a helluva lot better in January than they will in July.

With respect to point No. 2, Mr. Leonhardt says:

"Sure, we repair and recondition them in our service shop, but some of those old jalopies can develop a lot of trouble or symptoms of trouble when it gets good and hot, which it does in Louisville.

"But if you sell an old unit in the winter, it will generally run along fine for several months, and if it has a weakness or lacks capacity, the trouble won't show up until some six months after he has purchased it.

"By that time, if he has been paying for it on a time-payment plan, he has enough invested in it that he can be induced to allow us to repair it and keep it, where if he had been using it only a short time, his natural inclination would be to turn it back."

Bensinger's has been in the appliance business eight years. The firm started out handling one line of refrigerators, gradually took on other lines, but in the past three years has reverted to its original plan of handling but one make. The make handled is Frigidaire.

"A great many people buy from a certain individual or store because that salesman or organization has done something that inspires confidence in the prospect," said Mr. Leonhardt in discussing the single line policy.

"For example, suppose you or I

go out to purchase an overcoat. The clerk shows us several makes of overcoats, but doesn't seem to know much about any of them.

"He hems and haws when you ask him which one is best and does very little to inspire your confidence in any one make or model.

"On the other hand, take the man who is selling only one make. Naturally he puts all his enthusiasm behind it, and more than that, he hasn't had to learn the fine points and qualities of half a dozen makes, but only of one, and consequently has more to tell the customer and speaks with greater authority.

"That's the way it is in refrigeration, too, and we have found the single line much more satisfactory. Our salesmen can tell a story that isn't confused or contradictory, and they can inspire a feeling of confidence on the part of the buyer."

Concerning advertising, Mr. Leonhardt's formula is to take a theme and keep hammering it home with consistent use of newspaper advertising.

"If you're going to talk about the economy feature of the make which your store is selling, keep on talking about it until the point is firmly fixed in the minds of people who are prospects. Don't forget that few people buy on the spur of the moment; most of them have been thinking about an item a long time before they buy it, and notice the advertising about it either consciously or subconsciously."

#### IDEA OF SPECIALS

Mr. Leonhardt varies this advertising routine by using advertising copy on "specials" when the opportunity presents itself.

Big idea on specials, he says, is to get over the proposition in as big a type as possible, with copy that has a real timely sales appeal.

For example, a recent advertisement on radios, taking about three-quarters of a page, had three big spots in it: an illustration of the model, the special price at which it was being offered, and the following timely copy:

"Owing to recent unsettled conditions in Europe, the French distributor canceled his order, and we took the entire lot in order to be able to offer you this special price."

According to Mr. Leonhardt that advertisement sold \$2,000 worth of merchandise in three days.

In another advertisement on a special offer, in which two free items were to be given purchasers, nearly as much space was devoted to the illustrations and copy on each of the free items as to the product itself.

Bensinger's has hundreds of users and finds good prospect leads from them. Right now users are offered a double waffle-iron for each prospect name submitted resulting in a sale.

### Dealer's Complete Service Shop Provides Profits On Trade-Ins; Service Men Also Trained To Sell

SAN ANTONIO, Tex.—A service shop equipped to handle almost every type of electric refrigerator repair job has proved to be a profitable department of Praeger Hardware Co., refrigerator dealer here, declares H. Praeger, proprietor.

The service shop, where all makes of electric refrigerators are repaired and reconditioned, has been directly responsible for a large number of sales in addition to the straight service business, Mr. Praeger said.

Robert Ziegler, foreman of the service department, has built his own dehydrating machine for drying refrigerator parts, and claims that it works perfectly and dries parts quickly and thoroughly.

The dryer is a compact unit with three layers of insulation. Parts to be dried are placed inside.

Mr. Ziegler also has built a special paint spray booth for refrigerators. A refrigerator is wheeled into the booth entrance on a truck, placed on a track leading to a turntable in the booth, and, while slowly revolving on the turntable, is sprayed.

"The turntable makes possible the spraying of the entire refrigerator within a small space," said Mr. Ziegler, "prevents dust from getting on the unit, and is very handy."

"It is surprising what we can do with old refrigerators taken in on trades," declared Mr. Praeger. "There is a definite market for used machines in good condition, and we make a good profit on all the refrigerators which we recondition."

"A good cleaning, repairing, and paint job makes many refrigerators look like new."

"We consider that our shop has been a very good investment for us in the five years we have had it. We can also handle repairs for any make of electrical appliance, and this makes our shop very popular."

The Praeger firm has solved the problem of making service men into good salesmen by requiring all of its 15 employees to become familiar with the refrigerators carried in stock, so that each employee can step in and sell the units when the occasion arises.

The employees are requested to contact their grocers, butchers, bakers, and other trades people, and mention that if they need refrigerators the Praeger company would like to have an opportunity to bid on the sale.

"This sort of sales program brings results," declared Hal Halamada, refrigeration manager.

## FAIRBANKS-MORSE

### Assures FINISH QUALITY

#### WITH BENDERIZING A SELLING FEATURE

IN keeping with the outstanding mechanical features of the Fairbanks-Morse Refrigerator, the cabinet is scientifically designed for utility and beauty. It is modern in styling and the protecting finish has unusual lasting qualities that will appeal to the buyer.

To assure a greater measure of finish permanence the cabinet is Bonderized before the enamel is applied. With Bonderizing the enamel is given better adhesion and the cabinet better protection from rust. It prevents chipping and the spread of rust around scratch or dent.

Bonderizing is a constructive effort to give the customer better service and provides a selling point that the alert salesman can use to advantage. It is an unseen quality that should be demonstrated to every prospect.

PARKER RUST-PROOF CO.  
2197 E. Milwaukee Ave., Detroit, Mich.

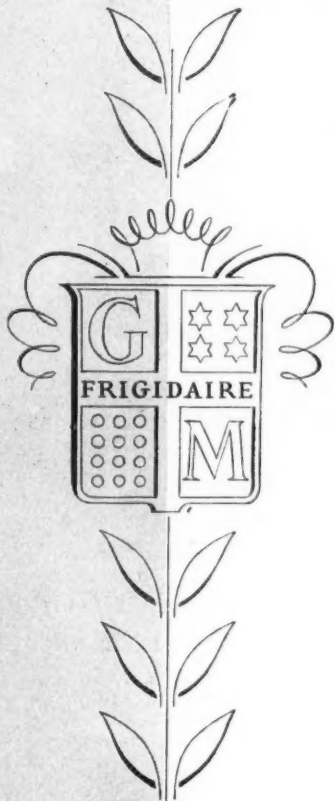
SEND FOR THIS BOOK

A book showing what a salesman should know about Bonderizing is available on request.



**PARKER**  
Processes CONQUER RUST  
BONDERIZING • PARKERIZING

WHAT MAKES

*Leadership?**A Statement by the  
Makers of***Frigidaire**

LEADERSHIP is a sort of stewardship...an entrusted honor, a reward for faithful performance. It is earned not for a single day's brilliance but rather is attained only after years of rigorous application to the principles of common honesty, industry and fair dealing. It is not won by a sudden shifting of sentiment but by a continually growing vote of confidence...an almost endless series of daily elections by which the leader is acknowledged. In the case of Frigidaire, the strength of its leadership lies in the daily acclaim of increasing millions of users, together with the steadfast loyalty of thousands of men who sell.

An interesting fact comes to light when the electric refrigeration business over the past few years is studied. On this one fact alone may rest the reason for continued leadership. *There seems to be a remarkable parallel between the successes Frigidaire has enjoyed and the contributions it has made to the industry and the public alike.*

Frigidaire is proud of its two-fold program to increase its usefulness to dealer and to public. It has been and always will be the ceaseless aim of Frigidaire to assist the dealer in building a

profitable business on Frigidaire products. Added to a liberal business policy are the advantages of proved selling tools and sales and advertising plans to help Frigidaire selling men make more money.

In its relations to the public it is necessary merely to point to the record of engineering progress. The famed Meter-Miser, the Cold Control, Quickube Trays, Automatic Reset Defroster, porcelain-on-steel cabinet construction, Hydrotors...all these have been basic contributions to the industry and particularly to the public. Even in a newer branch of its business Frigidaire has given so much undeniable value that it has already become a leading factor in the electric range industry in its very first year.

Frigidaire has continued over the years to fulfill its obligation to both dealer and public. In turn, and as a result of performance, Frigidaire has been entrusted with carrying the burdens of leadership. This obligation pledges Frigidaire to those policies that have made for leadership...an aggressive program that will contribute in a vital manner to the advancement of refrigeration so that both dealer and the consumer may continue to benefit.

FRIGIDAIRE DIVISION • GENERAL MOTORS SALES CORPORATION  
DAYTON, OHIO

# Air Conditioning

## Kansas College's Experiments In Milling Closely Controlled With Conditioning

MANHATTAN, Kan. — Air-conditioning equipment has been installed as an aid to experimental work in the milling department of Kansas State college here.

The installation consists of a number of specially built white porcelain cooling units, and the refrigerating unit using two compressors and two motors on a common base.

The college has a small mill, complete in every detail, where all types of cereals are milled, in experiments designed to find the best possible method of manufacture to get the best results from the finished flour. After the various flours are milled, they are sent to an experimental bake-oven.

All of the auxiliary equipment necessary in doing this work must be operated under rather exacting conditions.

One of the white porcelain cooling units is used in each of the rooms, and each one is connected to one of the compressors. The compressors are so cross-connected that at times, when a high humidity is desired in the two rooms, only one compressor is used to operate the cooling units,

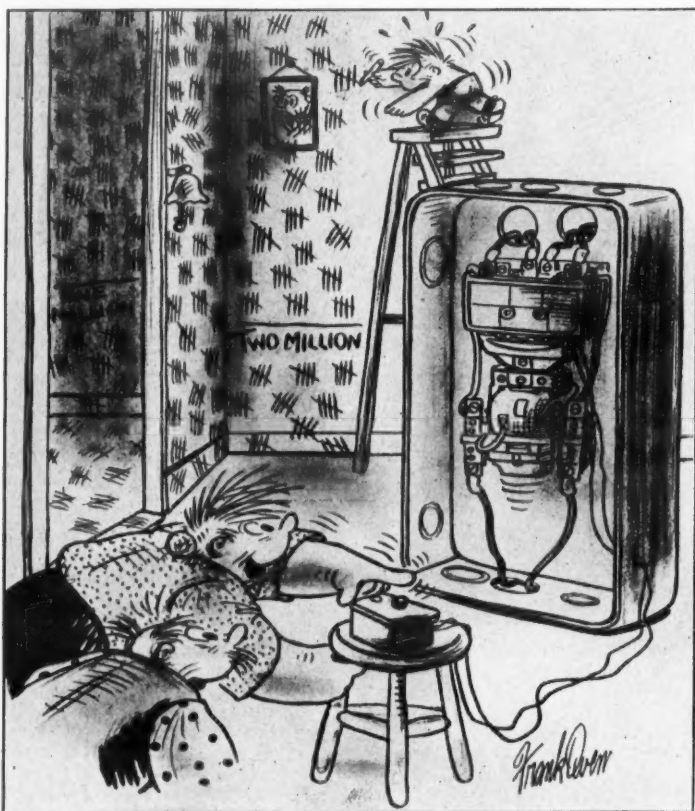
resulting in a high suction temperature.

This results in a longer running time, and much less dehydration, so that the humidity can be carried quite high. Steam nozzles in the cabinets, operated by a room-type humidistat on the steam solenoid valve, put additional steam into the air stream, thus raising the room's humidity.

The conditioning system is designed so that a temperature of between 70 and 80° F. can be carried inside the rooms, with humidities varying between 40 and 60%.

Kansas State college has the only complete college course in milling in the United States, the only other college milling department being maintained by the Soviet government in Moscow. Entrance requirements are rigid—in addition to high scholastic standing, students must be either sons or special representatives of recognized mill owners to take the course.

The installation was made by the Kansas City, Mo. branch of General Refrigeration Sales Co., supervised by Frank Angus, branch manager.



**"He wants to know when this starter will wear out!"**



Here is a starter that has been made as simple as possible. Bearings, pivots, pins, flexible jumpers, and complicated mechanisms have all been eliminated. There is a minimum of moving and wearing parts. For that reason, this Allen-Bradley solenoid starter will give millions of trouble-free operations.

The double break, silver alloy contacts on these solenoid starters never have to be cleaned or filed. Any oxides that may form on the contacts will conduct current as well as the contact metal itself.

On rural lines where line voltage conditions are liable to be bad, the efficient solenoid magnet on Allen-Bradley

solenoid starters holds the switch closed and prevents unnecessary shutdowns.

Ease of installation is another feature of these starters. Their generous wiring space, white interiors, accessible terminal connections, many knockouts, and removable cabinet cover make it easy to do a quick and neat job.

These are some of the reasons why you see so many Allen-Bradley solenoid starters on refrigeration and air conditioning installations everywhere.

SEND FOR "THE STORY OF THE SOLENOID STARTER"



Allen-Bradley Co., 1313 S. First St., Milwaukee, Wis.  
Please send me "The Story of the Solenoid Starter."  
NAME \_\_\_\_\_ COMPANY \_\_\_\_\_  
ADDRESS \_\_\_\_\_

**ALLEN-BRADLEY  
SOLENOID MOTOR CONTROL**

## R. S. Thurston To Manage G-E Distributorship

MEMPHIS, Tenn. — Robert S. Thurston, head of the sales engineering section of the General Electric air-conditioning department for the past five years, has resigned his position to become general manager of the General Air Conditioning Co., G-E distributor here.

Mr. Thurston, who was associated with General Electric's air-conditioning activities from the beginning, joined the company's student engineering course in 1931 following his graduation from Cornell.

In 1932 he began working on heating and air conditioning under Elliott Harrington, writing the company's first engineering data book on these products, and when the G-E air-conditioning department was formed he was appointed head of the application engineering section.

Following a brief interlude in the New York office, as head of cooling sales, he returned to Bloomfield, N. J., in charge of sales engineering and cooling equipment sales, the position he leaves to enter the distributorship.

## August Cooling Orders Ahead of 1937

WASHINGTON, D. C.—Orders for self-contained unit air-conditioning systems booked during August by 125 American manufacturers showed a substantial increase over those for the corresponding month last year, according to statistics compiled by Director William L. Austin of the Bureau of the Census, Department of Commerce.

Orders totaling \$349,067 were booked in the month this year, as compared with \$144,976 in August, 1937, the report shows. Self-contained system orders during July of this year amounted to \$495,091.

Central-station conditioning systems for human comfort use showed orders totaling \$289,591 during August, an increase over the \$269,433 reported for July, but a drop from the \$315,836 of August, 1937. Industrial systems of the central-station type also showed decreases, with \$33,927 this August against \$45,302 in the same month last year.

Orders for air filters also were up from comparable totals in 1937, as well as from those for the previous month. Filter orders amounted to \$39,885 this August, against \$35,937 in July and \$32,937 in August of last year.

There was a steep decline in the volume of refrigeration equipment sold to contractors and other distributing outlets for air-conditioning systems. Total for this August was \$71,338, as compared with \$217,609 in the month last year.

## First Portable Conditioned Smokehouse Is Shown

CHICAGO—What is claimed to be the first completely air-conditioned smokehouse to be equipped with a self-contained unit and automatic controls was shown by Carrier Corp. at the annual meeting of the American Institute of Meat Packers held recently at the Drake hotel here.

Portability of the unit enables it to be moved about as necessary to meet plant changes.

## Direct-Mail, Active Follow-Up & Liberal Terms Sell Conditioning For Carney

WINONA, Minn. — Most of the householders in those parts of Minnesota and Wisconsin within 100 miles of Winona, Minn., and in Northeastern Iowa, nearby, seemed either unaware of the advantages of air conditioning or opposed to it because of what was considered the excessive cost.

So the Carney Heating Service Co. of this city of about 20,000 people, hub of Southeastern Minnesota, decided to tell the home folks all about it—air conditioning. (The concern is the only distributor of air-conditioning devices in these parts. It handles the Capitolaire products, made in St. Paul.)

These are the ways in which they did it and are doing it:

First, because the results were and are best—solicitation is by mail—sales letters and descriptive pamphlets.

Second, personal solicitation, either preceding or following that by mail.

Third, advertising in newspapers and by radio. There is still another way: earning the goodwill of satisfied customers who, in turn, present the names and addresses of relatives, friends, and acquaintances who might be interested.

By means of these processes the Carney Co. has increased the number of its installations of air-conditioning units more than 50% within the last 12 months.

In many of the 100 or more towns in which the concern is represented by local dealers there are directories which show the names and addresses of home owners. The brunt of the mail campaign is directed against them. Telephone directories are also used but in minor degree.

Early in the spring the firm sends about 1,000 letters with the usual printed matter, under first class postage, to as many prospective patrons. A similar number is sent a few weeks afterward, as a kind of followup. From these letters there usually are created about 150 worthwhile "prospects." These are cultivated by followup material; the most likely are then solicited by salesmen.

How many customers are made by means of the radio (the Carney Co.

buys time from the station in La Crosse, Wis., about 30 miles from Winona, Minn.) and by small display advertisements in the only daily newspaper in the latter city has not yet been definitely ascertained, but the number is said to be very small in comparison with that effectuated by mail and personal contacts.

The radio announcement consists of about 100 words every morning excepting Sunday, the script deals only in part with complete air conditioning. The larger part tells of automatic oil heating.

Where the greater part of sales resistance is composed of or is based upon the cost of an installation it is lessened by the liberal terms of payment offered by the company. Its dealers usually are financed either by the commercial-paper concerns or by local bankers.

Customary terms are about 20% cash as down payment, the remainder payable in the remaining 11 months of the year. The customer pays the registration fee of \$1 at the county courthouse and 6% as a carrying charge. There is no servicing fee; the company gives one year's servicing free of cost to the buyer.

The cost of servicing is very low because the Carney concern shows the customer how to operate the unit.

"We prevent trouble by showing 'em how," said a Carney executive. "Ninety-five per cent of our service calls are caused by ignorance as to the operation of the mechanism."

As a rule the local dealer installs; if he finds difficulties the Carney offices are notified; then a mechanic is sent to the job.

Nine of 10 installations by the Carney company and its dealers are winter units but the sale of summer units is growing satisfactorily. There is less experimentation with the winter unit; the percentage of profit is larger.

Only a very small part, perhaps 2%, of the Carney business is through the FHA, the company reported. "Too much trouble" was given as the reason, although FHA has increased the number of sales a little.

## Jockey & Stable Boy Nose Out Horse In Race For Air-Cooled Stable

COLOMBO, Ceylon—To improve the speed of his prize race horse, an owner here has installed an air conditioner in the "hay burner's" stall.

He discovered that the jockey and the stable boy not only enjoyed the horse breezing home, but also the horse's home breezes. The horse was obliged to "move over" when his two buddies decided to take advantage of the sleeping comforts supplied by the air-conditioning unit. The owner found all three blissfully removed from the night's sweltering temperature and enjoying an air-cooled sleep.

## Argentine Bldg. Conditioned

BUENOS AIRES, Argentina — A year-around air-conditioning system has been installed by General Electric, S. A. in the Carlos Sequin Bldg.

## 14 Jobs In September Reported In N. Y.

NEW YORK CITY—Fourteen air-conditioning installations contracted for during September in the metropolitan New York area served by Consolidated Edison Co. of New York, Inc., raised the total for the first nine months of the year to 333 systems, with a total connected load of 13,459.87 hp., according to statistics compiled by the utility.

All September sales were in commercial, residential and industrial sales remaining at a standstill.

Installations for the nine-month period were divided among the boroughs as follows: Manhattan and the Bronx, 227, with 9,604.83 hp.; Brooklyn, 60, with 1,432.36 hp.; Queens, 46, with 2,422 hp.

Residential	7
Apartment Houses	1
Banks	12
Barber Shops	1
Beauty Parlors	2
Broadcasting Studios	2
Clubs	2
Dance Studios	7
Doctor's Offices	11
Hotel Dining Rooms	1
Moving Picture Studios	24
Offices	2
Office Buildings	2
Opticians	117
Restaurants	7
Showrooms	8
Department Stores	66
Retail Stores	33
Theaters	1
Funeral Parlors	3
Miscellaneous Commercial	6
Industrial	6



ARTIC operates efficiently in compact, light weight units with low power consumption. It gives controlled low temperatures down to -10°F. at POSITIVE pressures. For dependable refrigeration, specify and use ARTIC.

ARTIC—THE PREFERRED METHYL CHLORIDE FOR THE SERVICE MAN

E. I. du Pont de Nemours & Co., Inc.  
The R. & H. Chemicals Dept.  
Wilmington, Del.  
District Sales Offices: Baltimore, Boston, Charlotte, Chicago, Cleveland, Kansas City, Newark, New York, Philadelphia, Pittsburgh, San Francisco



MERCHANT & EVANS CO.  
Phila., Pa., U.S.A. Plant at Lancaster, Pa.

SELL  
HUMIDITY!

MAKE MONEY THIS  
WINTER WITH  
WALTON HUMIDIFIERS!



**PORTABLE TABLE MODEL**  
 Heavy gauge copper finished in beautiful statuary bronze. 16" in diameter . . . evaporates 4 gallons a day. Retail \$43.50. Also available with 27" metal tripod.

## BEHIND EVERY DOOR IN YOUR DISTRICT LIVES A LIVE WALTON PROSPECT

AND YOU CAN FORM NEW AND PROFITABLE CONTACTS WITH OLD CUSTOMERS WITH THIS NEW APPEAL!

**HOME** owners and renters buy for better health and comfort! Walton Humidifiers remove the menace of man-made heat—lessen the likelihood of colds, grippe, nose and throat troubles, sinus and catarrhal complications due to the dry air of furnace-heated homes. They revitalize both air and breathers! And prevent much property damage due to warping of woodwork and furniture.

**APARTMENT** dwellers like its luxury and family-health promotion! Walton Humidifiers give harsh apartment house heat the balmy softness of a Spring morning! They find a ready market among people dependent on janitor-controlled or automatic heating systems by removing the "bite" from devitalized air and making it wholesome and breathable.

**OFFICE** people buy Walton Humidifiers for greater efficiency! Employers have learned that you can't do business in a bake-oven atmosphere! Walton Humidifiers put pep into office workers—lessen lay-offs due to seasonal sickness.

**WALTON HUMIDIFIERS** will prevent millions of dollars of loss due to dry-heat damage to fine furnishings! Dry furnace-heat warps wood, bakes book bindings, weakens wool-fibers, and helps to ruin rugs and carpets, peels wallpaper. In addition to protecting family health, Walton Humidifiers save householders from paying the penalty of parched personal property.

Ever Increasing Number of Alert Dealers Depend on Walton Sales to Weather Winter Slump . . . This Winter Will Establish All-Time Sales Records

**READ ABOUT THIS REMARKABLE OPPORTUNITY AND ACT TODAY!**

TODAY we know from proven records that air humidifiers sell proportionately as fast during any mid-winter month as fans sell in summer—for both are natural answers to natural human needs!

People now know the necessity of putting natural, wholesome moisture back into air devitalized by man-made heat. They will no longer put up with the discomfort of parched throats and dusty nose passages. With the first cold day they'll want Waltons!

And just as certainly as cold weather comes, they will be eagerly alert for a humidifier that does an ample, scientific job of creating comfort! For cold days mean dry heat and dry heat means a market for humidity! It's the one phase of conditioning inside air that has a sure market irrespective of abnormal seasonal temperatures.

### Walton Humidifiers Do An Abundant, Fool-Proof Job of Air-Moistening

Scientifically designed, expertly engineered and universally approved by heating, ventilating, and air-conditioning engineers, Walton Humidifiers are endorsed everywhere as important factors in public health.

They definitely reduce the danger of common colds, throat and nose trouble, catarrhal and sinus complications due to the arid air of artificial house heating, for the Walton Humidifier breaks up moisture into vapor form, sends it out in a manner that makes it readily absorbed and in a sufficient quantity to overcome the dryness caused by man-made heat.

### Priced For Every Prospect's Purse and for Your Profit!

Walton Humidifiers are made in four models, to meet every demand. Your customers can take their choice from the beautiful statuary-bronze table model at \$43.50 (capacity 1½ pints p.h.) to the imposing Walton Duplex—a masterpiece of walnut-finished steel furniture that sells for \$145 and vaporizes 3½ pints every sixty minutes!

Due to past phenomenal sales success, even our new factory capacity will soon be crowded with orders placed to prepare for next winter's volume.

Don't be disappointed! Don't delay! Fill in and send this handy coupon today—for full details of the most remarkable sales opportunity on record—an opportunity to substantially increase your winter sales volume—to keep your sales force intact and keep your salesmen making good money during the winter months.

**There Will Be No Other Announcement To The Trade!**

#### THE WALTON CABINET

Sturdy steel, beautifully grained in rich walnut, 26" high, 13" square. Evaporates 5 gallons a day. Automatic humidity control and visible water gauge. Retail \$95.



**THE WALTON DUPLEX.** Built of scientifically insulated steel in handsome walnut finish. 26" high, 23" wide, 14" deep. Evaporates 9 gallons a day. Automatic humidity control and visible water gauge. Retail \$145.

# WALTON LABORATORIES

INCORPORATED

1186 GROVE STREET • IRVINGTON, NEW JERSEY

DEPT. A. C. R. N. 11-2

**AIRMAIL THIS COUPON TODAY!**

For complete details, discounts, and sales-promotion plans Write, Wire—NOW!

DEPT. A. C. R. N. 11-2

**WALTON LABORATORIES, INC.**  
1186 Grove Street, Irvington, New Jersey

Rush full information about Walton Humidifiers.

Name.....

Firm Name.....

Address.....State.....

City.....

# Farms Offer Big Market For Refrigeration Because It Can Be Put To Many Uses

## Community Refrigerators Solving a Problem In Low-Income Sections

KNOXVILLE, Tenn.—Community refrigerators have attained a popularity among farmers in the south, because they represent a real service at low cost to farmers with limited incomes, declared C. J. Hurd, acting chief, agricultural engineering development division, Tennessee Valley Authority, in speaking before the food preservation conference here last week.

"Food preservation through refrigeration is of prime importance to farms in the South," Mr. Hurd declared. "It represents a real opportunity of improving the diets of the farm people, and increasing farm incomes through savings in food and in making a better product for retail sales."

### IMPROVEMENT IN DIET

"Improvement in diet is almost self-explanatory when we study the amounts of different kinds of meat consumed by rural people in the South. According to the Agricultural Economics Department of the University of Tennessee, rural people in Tennessee eat less than 5 lb. of beef per capita a year, compared with over 146 lb. of pork. Lack of adequate refrigeration facilities was attributed as one of the principal reasons for this low consumption of beef."

"Rapid expansion of rural electrification," Mr. Hurd claims, "has made possible an opportunity for a marked change in this situation. In the seven southern states over 138,000 farms are now served with electricity, an increase of over 117% in the last three years."

In the Tennessee Valley and the immediate adjacent area about 18,000 families are served by rural electric cooperatives, and during the past four years over 9,000 household mechanical refrigerators have been purchased, with purchases continuing at the rate of several hundred each month.

### MUCH STORAGE SPACE

"Household refrigerators, however," he continued, "do not completely solve the farmer's food preservation problem. Farmers should have facilities for cooling and storage of several hundred pounds of products at one time, both for home consumption and for retail sale. If pork is to be cured properly, a month to six weeks are required at 35 to 40° F. temperature."

"The stumbling block is the simple fact that the large majority of farmers simply cannot afford individual farm refrigerators of this size. In 1935 the gross farm income in the Valley states averaged about \$725. Can these farmers afford to invest from \$300 to \$750 for a large 'reach-in' or a small 'walk-in' refrigerator?"

"Aside from the specialty crop farms, such as dairy, fruit, or truck, where individual farm refrigeration may be well justified, the majority of southern farmers must look to

other possibilities for refrigeration facilities."

"Freezer locker and meat curing plants are doing much to aid these low income and general type farms. Still another service is being offered the farmer—that of a community refrigerator for short-period storage of perishable products. These community refrigerators will complement future developments in rural refrigeration. They also make available refrigeration facilities to farms too far distant from other services, such as freezer-locker or meat curing plants."

"The Tennessee Valley Authority, in cooperation with the land grant colleges and state vocational agriculture education departments in the Valley, began a study of community refrigeration in 1934. Investigations were first directed toward the development of suitable mechanical refrigerators that 10 to 20 farm families could jointly use."

### PLANS FOR COOLER

In order to keep the farmer's investment to a minimum, the Engineering Experiment Station of the University of Tennessee and the TVA developed construction plans for a small walk-in cooler, approximately 6 ft. 6 inches x 5 ft. x 8 ft. 6 inches (inside dimensions). This size has later been superseded by a unit 6 ft. x 8 ft. x 8 ft. 6 inches, equipped with a standard 1/2-hp. refrigeration unit. The temperature is maintained at 35° to 38° F. with a relative humidity of 70 to 75%. Since 1934 several refrigeration manufacturers and local cabinet shops have placed on the market refrigerators of similar size at reasonable prices. Investment in this size refrigerator will be between \$700 and \$950, depending upon local conditions, plan of purchase, and financing arrangements.

A demonstration program is being conducted in 11 communities, which were selected to represent typical agricultural conditions in the Valley, the TVA official explained. Some units were locally constructed, others built by refrigeration contractors. The locations of the refrigerators are in cross-roads stores, centrally located farms, and in agricultural buildings of local high schools.

### PRACTICAL DATA

The study thus far has been directed toward securing data pertaining to the practical application to farm practices and obtaining records on the operation of these units. Farm groups have formed cooperative associations to use the refrigerators and administer the operations. Each group has the responsibility of paying the operating costs, and is permitted, at the end of the one or two year demonstration period, to purchase the equipment.

Some of these refrigeration associations have failed, the records show, others are making outstanding records of accomplishment. Certain fundamental reasons are the cause of the failures and successes of these associations. In making recommendations for a community refrigeration association, the following

facts should be taken into consideration, Mr. Hurd said:

1. **Local leadership**—The group must have a leader or leaders who are public spirited to the extent of keeping alive the interest of the group in this cooperative enterprise. This is particularly essential since the value of a community refrigerator lies in all of the members making full use of its facilities.

2. **Educational demonstrations**—The county agricultural agent or vocational agriculture instructor should sponsor meat cutting and other demonstrations to inform the members of correct ways to prepare products for the refrigerator.

3. **Selection of location**—The reason for the failure of one demonstration association was largely due to placing the community refrigerator on a farm which, although fairly centrally located, was not on a main road used by other farmers in their daily trips to market or to the local store.

### BEST LOCATION

The community refrigerator is best located on the most used road and preferably either at the cross-roads store or in a school building. This provides both easy access to all members and an attendant who can easily care for its operation in connection with his other duties.

The storekeeper in every case has been agreeable to having the refrigerator in his store, and has been an active member in the association.

4. **Careful management**—Naturally, efficient management is necessary. The manager or his representative should keep simple records of products stored and removed from the refrigerator. He should also have the authority to reject anything that might endanger other products stored. He should also render monthly reports to the secretary-treasurer of the organization, so that bills and accounts can be properly maintained.

### MEMBERSHIP FEES

5. **Membership fees**—The first plan tried was to have 10 to 12 members in the association and to prorate the operating and financing costs. With a 12 member group, and a 6 ft. x 8 ft. x 8 ft. 6 inch refrigerator, this would mean a cash investment of \$60 to \$75 for the equipment and 50 to 75 cents a month for operation and maintenance.

Although this may be entirely reasonable from an economic standpoint, in actual practice this initial investment is difficult for low income farmers to pay, said Mr. Hurd.

From analysis of one of the successful units, it was found that the membership could be easily increased to 20 to 25 members, and by careful management a 6 ft. x 8 ft. x 8 ft. 6 inch refrigerator will handle their home consumption needs for fresh and cured meat, vegetables, fruit, etc. A 20 member group would require only \$36 to \$45 investment per member and 30 to 40 cents a month for operating costs.

### STRICT RULES

This plan should be accompanied by strict rules covering the maximum amount of products that can be stored by each member a month, and a system of operation that will distribute heavy load requirements, such as meat curing, over a period of several months, the speaker pointed out.

Fees should be paid preferably one year in advance, in order to eliminate "bill collecting" by the treasurer and assure a balance in the treasury to take care of monthly operating costs.

6. **Agricultural adjustments**—The community refrigerator will be of more service to the community each successive year of its operation. This will be largely due to farmer mem-

bers adjusting their livestock programs to provide a more uniform supply of pork, beef, and veal throughout the year. Refrigeration makes it possible to butcher meat animals safely at any season of the year.

7. **Selection of the community**—Community refrigeration is not adapted to all communities. For example, a dairy district or fruit section is better adapted to individual farm refrigerators or a large central storage plant.

There is a tendency in communities located near large cities for farmers to market their products immediately and buy back from retail stores their supplies as needed. Frequent trips to the city encourage this practice. It may be some time before farm people

to \$500 a year. Savings to the Clarksville, Ga., Refrigeration Association for one year were as follows:

1. Saving in feed by slaughtering at optimum time .....	\$ 84.50
2. Savings to farmers who butchered animals during summer that suffered broken legs .....	59.50
3. Savings in meat losses that was normal to community without refrigeration (10%) .....	160.45
4. Savings at 5 cents per lb. on beef stored in refrigerator compared to commercial retail price. 171.75	
Total .....	\$476.20

After deducting cost of electricity, 6% interest on investment and 10% for depreciation and service, there still is a net saving to the community of \$300, which amounts to 37% on the investment in one year.

Items of value that are not meas-

## Farm Refrigeration To the Forefront

The refrigeration industry, in its constant search for new and expanding markets for refrigeration equipment, is beginning to give more attention to the possibility of installing cooling equipment for farm homes and for farm storage houses.

Some statisticians estimate that 30% of the refrigeration market potential is on farms, but that only a small percentage of this market has been tapped, while the market saturation is relatively high in metropolitan areas.

It is true, of course, that in certain areas and among certain groups of farmers the income level is so low as to retard sales, but so badly does the farmer need refrigeration that "community food storages" have sprung up to fill the need in such areas. This and other phases of the farm refrigeration picture are described on this and the following page.

in these areas will adjust their operations to a community refrigerator.

Community refrigeration is best suited to strictly rural areas where general diversified farming is predominant.

8. **Distance of members to refrigerator**—The farthest distance that members can be from a community refrigerator and still economically use its facilities depends on the location of the refrigerator with respect to "normal travel" of the farmer. If the farmer goes by the unit frequently on other business, it is logical that distance is no particular object. Distances of 25 miles have been recorded by one group while in another community farmers have objected to traveling more than five miles.

9. **Surveying possibilities**—In planning for a community refrigerator it is essential that an actual survey be made, listing the kind and volume of production and consumption needs of interested persons and the financial contributions they are able to make.

10. **Proper organization**—Meetings should be held and plans perfected before any commitments are made. There should be complete accord of potential patrons as to the location of the unit and the plan of operation. Where a farm cooperative organization already exists in the community, it is often desirable to combine the refrigeration project with it in order to save expenses of a charter and other organization details.

11. **Cooperative organization not always essential**—An individual can provide community refrigeration on his own farm or store. This should work to mutual advantage, as nominal storage rentals will materially assist in paying the operating cost and at the same time provide economical refrigeration facilities to neighboring farmers.

Community refrigeration has both a tangible and intangible value to a rural area, it was brought out.

Actual savings to the community have been recorded at from \$300

ured in dollars and cents are that farmers can have home grown beef and pork the year around, and an extended diet of fresh fruit and vegetables, said Mr. Hurd. It also encourages added production of livestock in the area, which is essential in a soil conservation program.

The Clarksville, Ga., unit is a measure of the possibilities of community refrigeration in the South. Organized in the spring of 1936 by the instructor in vocational agriculture at the local high school, it was put in operation as a community enterprise that summer. From September 1936 to September 1937 a total of 15,333 lb. of meat and farm products was stored in the 6 ft. x 6 ft. x 8 ft. 6 inch refrigerator. Besides the 10 members, 58 other farm families used the facilities.

### INCREASES SHOWN

From September 1937 to September 1938 about 20,000 lb. of products were stored by the 10 members and 95 additional farm patrons. This represents a 30% increase in weight of products stored and a 54% increase in number of patrons. The original investment was \$800. Net savings of \$300 were shown the first year.

So popular was this refrigerator that two additional units of the same size were installed in this community by individual patrons during 1937.

Interest in refrigeration at Clarksville is now so keen that the Clarksville Refrigeration Association is making plans to install a complete refrigeration plant, including a killing room, cool room, and freezer lockers.

### APPLY KNOWLEDGE

"The manufacturers of refrigeration should apply their technical knowledge in suggesting refrigeration equipment best suited to the community needs," said Mr. Hurd. "It will be only through this procedure that a well rounded farm refrigeration program can be launched."

"Community refrigeration can be adapted to certain areas where more specialized refrigeration equipment, such as individual farm units or freezer lockers, does not apply. And it is the starting point for a long term development in both farm and community refrigeration."

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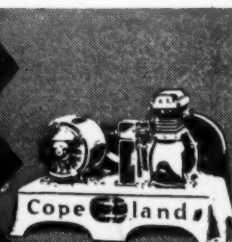
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## Dealers Can Dominate Farm Market, But Must Follow Electrification Closely

PHILADELPHIA — Further evidence that farm homes are first-class prospects for household electrical appliances is shown by results of a survey covering 1,142 farm homes in five midwestern states, made by the division of commercial research of the advertising department of Curtis Publishing Co.

Although more than half of the farm homes studied have had electrical service for less than two years, the survey showed that:

41% of them owned electric refrigerators, and 34.2% said it would be their next appliance.

13% of them owned electric ranges, and 34.2% planned to make it their next purchase.

90.1% of them owned electric washers, and 92.1% owned radios.

8.4% of the farm homes owned milk coolers, and another 5% owned electric water heaters. Ownership of 20 ironers, four stokers, one dishwasher, and one air conditioner also were shown in the survey.

### DEALERS DOMINATE

The survey, covering 76 electrical appliance dealers in the territory studied, showed that this type of dealership was the dominating factor in refrigerator sales, accounting for four times the number of units sold by the next largest sales outlet.

Appliance dealers also accounted for more than 55% of the electric range business in the territory, and, with hardware dealers, shared more than half the electric washer business done.

The survey also brought out the fact that appliance dealers shared in the total amount of business done in almost direct proportion to the amount of direct canvassing their sales forces did.

Sections of Pennsylvania, Ohio, Michigan, Illinois, and Wisconsin were covered in the survey.

### FARMERS OWN MORE

Comparison of appliance saturation percentages shown in the survey with those of all homes, including both city and farm, shows that these farmers average better than city folks in number and variety of electrical appliances owned.

For instance, while electric refrigeration saturation was 41%, as compared with the estimated 47.5% for the nation as a unit, electric range saturation among the farm homes studied was 13%, compared with the estimated average of 9%, washer saturation was 90.1%, compared with the national average of 55.5%, and radio use averaged 92.1%, compared with the national average of 82%.

Although a relatively high appliance saturation among the farm homes is shown by the survey, use of electricity is new to more than half of them, 26.6% having enjoyed electricity only one year or less, and 24.4% for from one to two years.

### LIBERAL BUYERS

In this time, however, they have been liberal appliance buyers, because 35.9% of one-year people and 38.7% of the two-year people already own refrigerators, according to the survey. In other appliance classifications, it was shown that electric ranges were bought by 9.2% of the first-year homes and 9.7% of the second-year homes; washers by 85.2% of the first-year and 88.9% of the second-year families; radios by 84.9% of the first-year and 97.5% of the second-year homes; water heaters by 1.6% of the first-year group and 1.8% of the second-year families; and milk coolers by 2% of the first-year and 2.9% of the second-year families.

A surprising percentage of both old and new farm electricity users are looking forward to buying electric refrigerators as their next appliance; and other significant numbers are planning to make their next electrical appliance a range or water heater. This is shown by the following tabulation:

	Refrigerator	Range	Water Heater
1 year	30.3	13.8	1.3
2 years	32.6	13.3	3.9
3-5 years	38.7	12.9	9.6
6-10 years	35.8	17.6	7.8
Over 10 years	38.1	15.1	7.2

Best opportunity to reach farm homes on electrical appliances, espe-

cially refrigerators, is within two years after the farmers begin using electricity, the survey indicates. In this study, at least, 32.7% of those who own refrigerators bought them the same year they received electric current, and a progressive 4.7% bought even before electric power was available. Another 16% bought during the second year in which they had electric current.

Even electric range sales followed closely the energizing of the farm lines. Before power lines were extended, 4.7% of those owning electric ranges had bought; 23.1% bought during the first year of electricity, and 16.9% during the second year. So 44.7% bought within two years after getting electric power.

That ample food storage capacity is a major item in a farm refrigerator is shown by the fact that 84% of the farmers' units had a capacity

of 6 cu. ft. or more, with 56.4% in the 6-cu. ft. class alone and 17.4% in the 7-cu. ft. class. Several large-size units were reported, including a 6 x 10 unit, a 20-cu. ft. unit, and a four-door commercial box.

In brand preference brought out in the survey, Frigidaire and General Electric led the refrigerator field with 35.6% of the total units, 22% being Frigidaire and 13.6% General Electric. Altogether, 27 brands were represented among the families studied. Kelvinator was third in preference, Coldspot fourth, and Westinghouse fifth.

Westinghouse, Monarch, and General Electric led in the electric range field, in which 21 brands were represented, with 60% of the total units of one of these three makes.

In the milk cooler field, Frigidaire, Kelvinator, and McCormick-Deering led, with a total of 57.2% of the total number of coolers being one of these three makes. Westinghouse and Hotpoint together accounted for 44.7% of the water heaters used.

The electrical appliance dealer is the dominating factor in refrigerator sales, the survey revealed. Appliance

dealers alone accounted for 44.9% of refrigerator sales, as compared with 11.1% for public utilities, the next nearest rival. Hardware stores accounted for 7.8% of the sales, furniture stores for 6.3%, and department stores for 5.4%.

Appliance dealers also dominate electric range sales, it is shown, 55.8% of the number of ranges being purchased through this type of outlet, with public utilities rising in importance with 21.1%. Furniture and hardware stores each accounted for 5.4% of the range sales made.

In the electric washer sales field, electrical appliance dealers and hardware dealers ran a close race for sales leadership, with the former finishing in the lead, 29.3% to 24.5%.

Appliance dealers also showed the way to all others in radio sales, with 35% of the total; and were second to plumbing supply dealers in water heater sales, with 20.3%. Utilities and dairy supply dealers led milk cooler sales, with 29% and 22.6%, respectively; appliance dealers were third, with 12.9%.

Seventy-six dealers and seven utilities supplied information used in

the survey. Sales figures obtained from them on electric refrigerators, ranges, and washing machines show that a total of 7,113 units were sold by them, 5,990 by dealers and 1,123 by utilities. On the basis of sales, dealers and utilities were grouped into three classes: A (above average), B (average), and C (below average).

A dealers alone made 60% of the dealer unit sales reported, with B dealers accounting for 30% of the sales, and C dealers the remaining 10%. Among utilities, 95% of the sales were made by the A companies, and 5% by the C group.

Almost a direct relation between sales of electrical appliances and canvassing was shown in the survey. Above-average dealers, of which there were 23, reported 44 full-time canvassers, 61.2% of the total number, and did 60% of all the business. Average dealers, the reports showed, employed 19 full-time canvassers, 26.3% of the total, and did 30% of the total business; and below-average firms employed nine canvassers, 12.5% of the total, and did 10% of the business.

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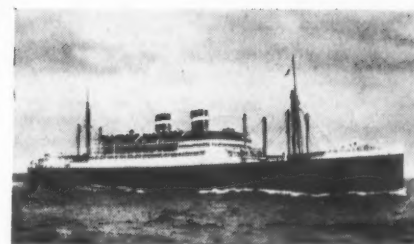
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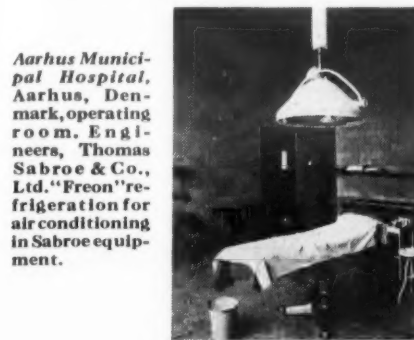
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Aarhus Municipal Hospital, Aarhus, Denmark, operating room. Engineers, Thomas Sabroe & Co., Ltd., "Freon" refrigeration for air conditioning in Sabroe equipment.



East Rand Proprietary Mines, Ltd., South Africa. 6,500 feet straight down in the hot earth, miners are cooled with "Freon" refrigerants in York equipment.

## AIR CONDITIONING & REFRIGERATION NEWS

Trade Mark registered U. S. Patent Office;  
Established 1926 and registered as  
Electric Refrigeration News

Published Every Wednesday by  
BUSINESS NEWS PUBLISHING CO.  
5229 Cass Ave., Detroit, Mich.  
Telephone Columbia 4242

### Subscription Rates

U. S. and Possessions, Canada, and all  
countries in the Pan-American Postal  
Union: \$4.00 per year; 2 years for \$7.00.  
All other foreign countries: \$6.00 per year.  
Single copy price, 20 cents. Ten or more  
copies, 15 cents each; 50 or more copies,  
10 cents each. Send remittance with order.

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VOL. 25, No. 9, SERIAL No. 502

NOVEMBER 2, 1938

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## Those Who Take Risks

CRITICS of the capitalistic system commonly point only to the heavy winners. Noting that some men make investments which yield high returns, they put curbs on investments and promotions which not only limit high incomes from successful ventures, but make it harder to win and even tougher for those who lose.

In the fascinating life story of Arnold H. Goss, who died by his own hand a fortnight ago, may be found a number of dramatic demonstrations of the fact that for every winning there are usually a number of losses. Had Mr. Goss been attempting to build the Kelvinator Corp. during the present New Deal era, it is doubtful if he could have got off first base.

### Biography of A. H. Goss Is Typical American Story

His beginning was typical of the formula that has come to be known as the American Success Story. Leaving home at the age of 14 with one Jersey cow as his capital, he made his way through college, gained admittance to the bar, and was on his way.

Like so many of the pioneers who built America to greatness, he was a man who combined an enormous capacity for work with a vivid imagination. Mr. Goss could envision the tremendous future to an infant industry when most men were agreeing that it had already shot its bolt.

### Turns Promoting Genius From Automobiles To Refrigerators

In the automotive field he was said to have been the brains behind William C. Durant in the organization of General Motors Corp. On the side he ran a highly profitable accessories manufacturing concern, making demountable rims and tire carriers.

Then he first caught the vision of mechanical refrigeration for homes. He saw a nation of households all equipped with smooth-running, automatic refrigerators. And so he began, to feed money

into the struggling Kelvinator Corp., then being run by Edmund J. Copeland, who designed the unit.

Against the advices of bankers, friends, and even of his own associates in Kelvinator, Mr. Goss poured more and more money into the development of the machine, the sales organization, and the company itself. He built Kelvinator's present model plant—overriding the decision of his directors—at a time when it was freely predicted that this one plant could easily produce all the refrigerators needed by the country for all time to come.

### Profits From Many Enterprises Go Into Building New One

Profits from his manufacturing concern, from his automobile interests, from a chain of drug stores, and from oil lands all went into the building of Kelvinator. He bought up Leonard and Nizer, and consolidated them into Kelvinator. Eventually the enterprise required more capital that he could obtain, and he lost control. But he had built well, and built solidly. And today Kelvinator is still going, is one of the leaders in the field, after surviving all the hazards of those early years plus a major depression.

It costs money to start an industry. It takes tremendous vision, incalculable courage, to continue financing an enterprise which loses money hand over fist, year after year. Eventually, if the enterprise is guided by real builders, it may return big profits. These profits, in turn, can be used to create another enterprise, with jobs for thousands.

But there must be losses before there are gains. That has been the history of American industry. First, a man gets an idea. A capitalist finances him while he turns the idea into something tangible and perfects it. A promoter catches a vision of the idea's future, and persuades more capitalists to risk their money in the hope of eventually getting good returns from their investment.

### Most Important Ingredient For Starting an Industry

Often the enterprise flops, and the capitalists lose their money. Sometimes it comes through, the capitalists profit, men are put to work, the people's living standard goes up another notch, and America's wealth is increased.

Most important factor in that development of a new industry is not the inventor, indispensable though he may be. An idea is just an idea until it can be made useful to large numbers of people. And that latter step takes men who have both money and courage—especially courage.

If every business enterprise turned out to be profitable, the measures which have been taken (and which the New Dealers threaten to take) which not only eat into profits, but make profits vastly more difficult to obtain, might be justified on the basis of "humanitarian" reasoning.

### If the Race Is Risky, Prize Shouldn't Be Small

But the fact of the matter is that most enterprises aren't profitable, that there's a big element of risk in every investment. And so, when laws make even "sure

thing" investments unattractive, it becomes almost impossible to find people willing to take a chance on something entirely unproved, something which may turn out to be a fizzle.

Before taking a risk, a man must have an incentive. Remove the incentive, and you are closing the door to Opportunity. And instead of a dynamic, progressive nation, you have one which is static and, eventually, retrogressive.

Arnold Goss, the boy who started out with one cow, ended up with one of the finest Jersey herds in North America. On the way, he made and lost several fortunes, several gigantic enterprises. This he was able to do because, in addition to courage and vision, he had incentive. And he left America much better off than he found it.

By our greedy share-the-wealth legislation, are we not putting an end to the American Success Story? Was Arnold H. Goss one of the last of the vanishing race of Pioneers?

## LETTERS

### Sales & Payment Plan With a Sporting Element

Almacen Westinghouse  
Importers and Exporters  
Distributors and Merchandisers  
Tegucigalpa, D. C., Honduras, C. A.  
Oct. 18, 1938

Editor:

We are interested in a sales plan known here as "Cooperatives" under which, numbered shares of determined value are sold on weekly payments, the amount of the payments varying with the face value of the share.

The "appeal" or "inducement" in this plan lies in the drawings which are held each week or month, the prize being that the share bearing the winning number is then considered paid in full and the holder may redeem it for merchandise of his or her selection, while those less fortunate may have to continue their weekly payments until the full face value of their share is paid up, at which time, they, too, may redeem it for merchandise of their selection.

Are you familiar with this or other sales plans based on the same principle? If so, may we impose upon you to the extent of asking that you furnish us with complete and detailed information on how they work out including minimum number of participants, cost of conducting them, percentage which must be added to the cash sales prices of merchandise sold under such plans, etc.

## They'll Do It Every Time . . . By Jimmy Hatlo



As subscribers to your very interesting publication AIR CONDITIONING & REFRIGERATION NEWS we believe that this request for information is not out of order.

B. REYES NOYOLA

Answer: This is a new one on us. Maybe some subscriber out in California could shed light on this something-for-nothing scheme.

### Simple Filing System For Back Issues of News

P. O. Box 752

Kelowna, B. C., Canada

Sirs:

Could you please arrange to have the date of publishing printed on the wrapper of the AIR CONDITIONING & REFRIGERATION NEWS?

There are probably many readers, like myself, who get behind with their reading during their busy season, and, when catching up, like to read each issue in its proper order. To do this means that we have to remove the wrappers of all the papers to find the date that we are looking for. The result is that the papers get considerably muddled up before they are read. Having the date right out on the wrapper would eliminate such messing around. So will you see about it please?

I make good use of the wrappers too, by the way. Here's how. Instead of tearing them off, I slide them off, and keep them handy to jot notes on of any items to which I might want to refer again. I replace the wrapper on the paper when I have read it and place it in a convenient drawer which holds a year's issues of the News. At the end of the year I transfer them to the storeroom where each year's papers are marked. This system solves my filing problems.

As the News is the most valuable paper to which I subscribe and also the only one which I keep, I don't begrudge the space it takes up in my storeroom.

PETER MAGUIRE

Answer: Dating the wrapper would add another operation to the mailing job which we try to accomplish with all possible speed. Most readers, we believe, are more impatient and less methodical about their reading. Others may be interested, however, in your simple and inexpensive method of indexing and filing back issues.

### Revising the Book

Teachers College  
Columbia University  
New York

Sirs:

In the book, Enriched Teaching of Science, by Woodring, Oakes, and Brown, published by the Teachers College Bureau of Publications in 1928, it is mentioned that you supply "Fundamental Principles of Refrigeration" at \$5.00 per hundred.

As I am revising this book would you please let me know whether this is still available. I would also appreciate a sample copy, and any other information you supply teachers.

MAXIE N. WOODRING,  
Professor of Education

Answer: The booklet entitled "Fundamental Principles of Refrigeration" was issued soon after ELECTRIC REFRIGERATION NEWS (now AIR CONDIT-

IONING & REFRIGERATION NEWS) was established in 1926. It is out of print entirely inadequate as an explanation of modern household refrigeration.

A series of popular-price manuals which we have published are now available for students of refrigeration and air conditioning.

These manuals have been adopted as texts by a considerable number of technical and trade schools and are sold in large quantities by refrigeration supply jobbers located in the principal cities.

### Prof. Nystrom's Plan Called 'Crack Brain'

Piggly Wiggly Corp.  
Equipment Department—Factory  
Jackson, Tenn.

Editor:

We note your article about Prof. Paul H. Nystrom's idea. It is "crack brain."

What he should do is to recommend that all items of equipment dating prior to the New Deal must be scrapped within the next five years. That will start the ball rolling.

Hope you will be able to put it through.

J. W. DINKEL,  
General Manager

Answer: Wouldn't it be still better to scrap the New Deal?

### Replacing Catalogs Lost In Hurricane

Schaperow Refrigeration Co.  
58 Denison Ave., New London, Conn.

Sirs:

All of our catalogs got messed up in the hurricane, so we are sending you the blanks for new catalogs that you sent us in your Red Book.

JAMES H. SCHAPEROW, Manager

### Manuals 'Helped A Lot In Work'

31-75 29th St.  
Astoria, L. I., N. Y.  
Oct. 13, 1938

Sirs:

Could you please send me manual No. A-1 on air conditioning, the first of the issue? I will get the other manuals in a short time. I have all the manuals on refrigeration and I read them all. They helped me a lot in work.

WARREN BENES

### Merkel Sees 500th Issue Forerunner To Big Show

The Merkel Brothers Co.  
Wholesale Distributors  
Plumbers Steam and Refrigeration Supplies  
Cincinnati  
Oct. 24, 1938

F. M. Cockrell:

Hearty congratulations on your very fine 500th issue.

The very fine, interesting, and complete coverage of the first All-Industries Exhibition and contemplated meetings is certainly going to help a lot to insure a large attendance by all factors in the industry and consequent success of this undertaking, in which we are all so very much interested.

HENRY W. MERKEL

## Profitable Sales Ideas

### Milkmen Given Bonus For Prospect Names By Dealer Whose Salesmen Specialize

READING, Pa.—By using dairy route salesmen as "bird dogs" to report the names and addresses of their customers who use ice refrigerators, Pomeroy's department store here has built up a large list of live prospects for electric refrigerators, reports Herbert Kinder, sales manager.

Dairies are glad to cooperate, Mr. Kinder finds, because they have discovered that practically all complaints regarding souring of milk have been from customers who use ice refrigeration.

As an incentive for the dairy salesmen to report all the names of ice users on their routes, Pomeroy's pays the salesman a bonus of \$5 every time an electric refrigerator is sold to a prospect whose name he turned in.

This cooperative plan followed a milk bottle thermometer test in the store. During a 10-day period, the store distributed 2,300 milk bottles with thermometers, and Mr. Kinder stated that at least 500 of these went to real live prospects.

During the demonstration period, the prospects were shown the temperature of milk when kept in an electric refrigerator and also when kept in an ice refrigerator. Prospects who received the milk bottle thermometers were told to note the temperature of the milk in their ice boxes, and compare that with the recommended safe temperature for milk.

This has been one of the most effective demonstrations used in a long time, according to Mr. Kinder. "Ordinarily electric refrigeration sales are highest during the spring and early summer months. This year, however, sales were lagging, and it was not until August that we started this milk bottle test. From this point sales began to climb, and our August and September sales were about 25% ahead of last year's figures."

"The demonstration cost us about \$100 extra for the materials and bottles used, but the effects of it are still being felt. Dairy salesmen are still turning in lists of names, two months after we started the plan, and we have a list of prospects that

will keep our salesmen busy for a long time."

Mr. Kinder made some changes in selling methods during the past year, organizing two separate crews of salesmen. One crew now sells refrigerators only, while the other crew handles the smaller electrical appliances.

"We find that the successful refrigeration salesman does not want to spend the time necessary to sell washers, cleaners, and other smaller appliances," he explained. "In his opinion, too much time is spent in making these small-volume sales for the amount of commission that can be paid. He is accustomed to the large unit sales, and is not a good plugger on the small stuff."

"On the other hand, the man who has made a success of selling small appliances and knows the work connected with it, can be kept plugging much better if he concentrates on the smaller items than if he is also asked to sell refrigeration. Our plan is to have the salesmen become specialists on the lines they are selling, rather than to have them depend on a superficial knowledge of a large number of items to do business."

Refrigeration salesmen are employed on a straight-commission plan, but a checking system is used to see that they make the calls on prospects' names given them from the files. Each salesman is required to call on at least 12 prospects a day, and to report the details of every interview.

When the daily reports are turned in by the salesmen, Mr. Kinder selects a few names at random from the lists and calls back on those prospects to determine whether the calls were made as reported, and whether the details are correct.

"Our salesmen know that we use this method of checking back," he said, "and they do not have any objections. After all, the man who does his work as it should be done doesn't care whether we call back or not. On the other hand, the man who tries to get by with indifferent methods and sharp practices should be brought in line for his own as well as the firm's benefit."

### Weekly Payments Increase Sales

TULSA, Okla.—Selling major appliances on a weekly rather than monthly payment plan, and making all instalments payable at the store's office, has provided Lloyd Electric Co. with one of its best sources of new prospects.

This instalment system gives the store just four times as many contacts with customers as it

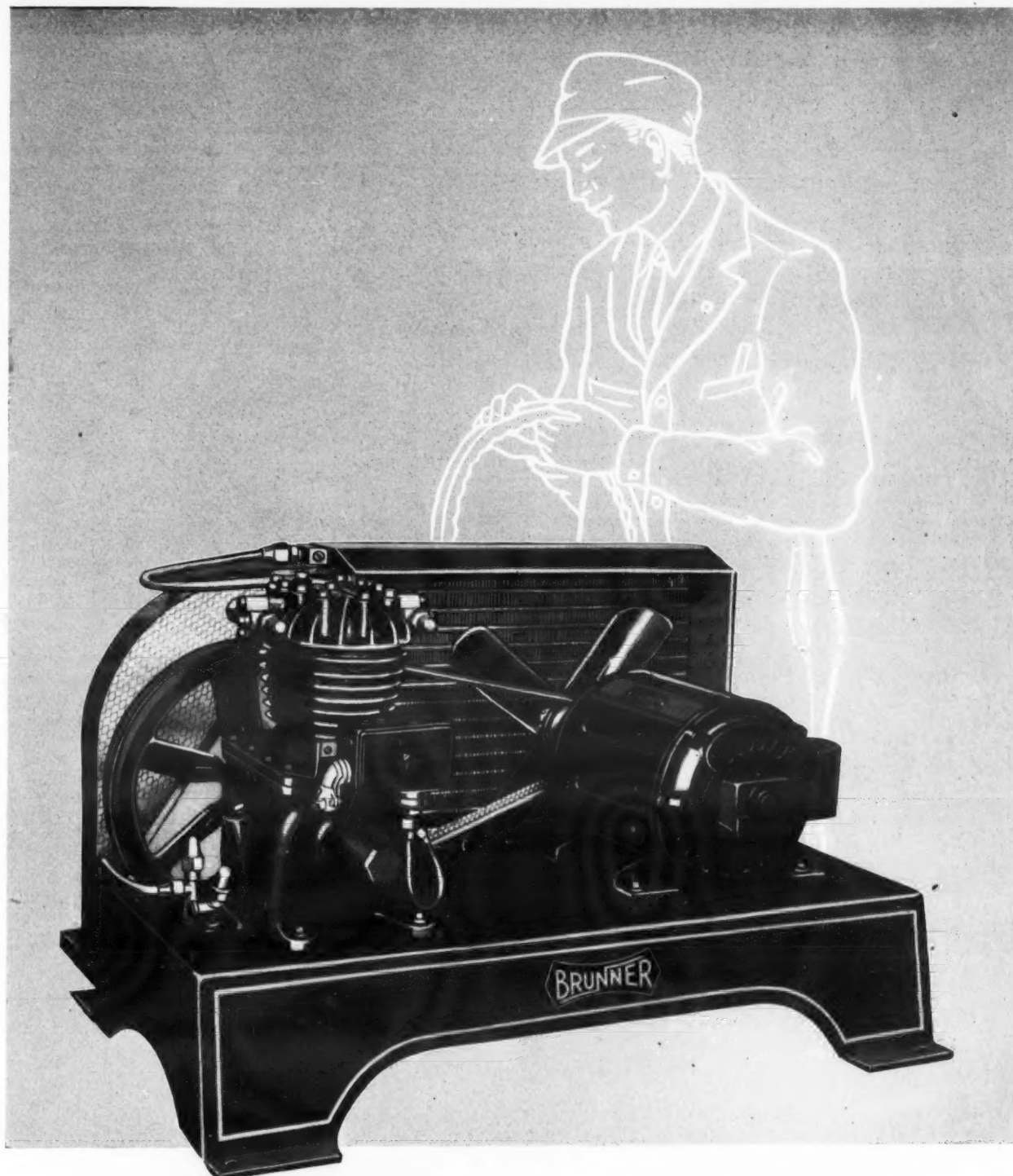
would have if payments were made monthly, and each time a customer makes a payment the person receiving the money keeps constantly in mind a request for new prospect names.

Customers soon become familiar with the idea, the store reports, and become friendly enough to suggest names without being asked. As a result, it is said, approximately 50% of the store's new prospects have been obtained in this way.

The system requires little more bookkeeping than the other method.

### Cleveland Dealer Opens Two Enlarged Stores

CLEVELAND—Superior Refrigerator & Furniture Co. has opened two enlarged stores here, one at 12517 Superior Ave. under management of J. N. Schultz, the other at 3138 W. 25th St. under N. A. Krause. The stores sell Frigidaire refrigerators, General Electric kitchens, and Easy and ABC washers. A "50 cents a week" rental plan on washers is featured.



## YOU'LL FIND DOLLAR-SAVING EXTRAS THROUGHOUT THE BRUNNER DESIGN

Especially at points of stress where mechanical fatigue so frequently takes its toll—there's where Brunner **extras** do their important job... Bronze bearings throughout protect against premature wear. The motor is especially designed with high starting torque. Oversize belting affords greater serviceability. All castings are heavier-than-average. Diamond bored centerless ground pistons insure extra quietness and longer life. Condensers of large prime surface, shrouded to direct air flow, insure maximum refrigerating efficiency. Yes, it's special features like these that put Brunner "out in front" ... Want full details? Write for catalog listing the whole range of Brunner Refrigerating and Air Conditioning equipment, air and water cooled units from ¼ to 15 H. P. Brunner Manufacturing Company, Utica, N. Y., U. S. A.

IT'S **BRUNNER**  
FOR *economical* SERVICE

### Must Get Facts To Sell, M. I. T. Prof. Says

BOSTON—In solving human conflicts, the same technique applies as in installing air-conditioning equipment, F. A. Magoon, associate professor of humanics at Massachusetts Institute of Technology, told the Air Conditioning Bureau of Boston at its October meeting here.

Prof. Magoon's subject was "Human Relations in Sales and Engineering."

In solving an air conditioning or refrigeration installation problem, the speaker pointed out, the engineer first has to ascertain the facts. Only then can he reach a conclusion, and solve his mechanical problems.

To solve the problems of human conflict, differences of opinion and opposing wills, one also must get the facts, Prof. Magoon said. Without these there is no true solution, whether it be the settlement of labor trouble, the sale of a refrigerator, or the engineering of an air-conditioning system, he continued.

A refrigerator salesman, Prof. Magoon declared, must not only have the facts on his side, his selling arguments marshalled, but he also must consider the objections of the housewife, and reconcile the two positions by considering all the facts.

In other words, said Prof. Magoon, the salesman must find out "what I must do to myself" before trying to solve the greater problem of conflict. And conflict is solved only when facts are considered in the light of mutual interest and benefit.

Domination is not a true solution, said the speaker; nor is compromise, which is only "sugar-coated domination." The solution must be on the basis of mutual, equal interest.

### Toledo Utility Shows Farm Equipment at 3 County Fairs

TOLEDO, Ohio—Displays of all types of electrical equipment for rural use and demonstrations of the value of electricity on the farm were sponsored again this year by Toledo Edison Co. at the Henry, Fulton, and Williams county fairs, held at Napoleon, Wauseon, and Montpelier, Ohio.

The utility considers these fairs an excellent means of presenting the advantages of electrical service to the farmer.

Hourly puppet shows held on a stage representing a large refrigerator were used by the utility to call attention to the variety of farm tasks to which electricity can be applied. These playlets were deliberately made only seven minutes long, so that people would watch the entire performance.

A complete chicken brooding project, operating under normal conditions, also attracted considerable interest. This display included a regular brooder house, with a brood of chicks under an electric hover.

In addition to these exhibits, spray painting machines, milking machines, soil sterilizers, hammer mills, water systems, electric roasters, and other electrical appliances were displayed.

All of these displays were sponsored by the utility's rural electrification department, under direction of R. E. Johnson. Efficacy of this department's coordinated educational program is reflected by the fact that the average farm customer of Toledo Edison Co. now uses 40% more electricity than on Jan. 1, 1937.

# Service Methods

## Many Different Kinds of Refrigeration Systems Used In Soda Fountains

This is No. 2 in a series of articles by Mr. Black and Mr. Seitz which will take up installation and service problems on soda fountains, ice cream cabinets, counter-type ice cream freezers, and low-temperature display cases.

In this series of articles the authors will describe the characteristics of various types of equipment, and provide detailed information about correct installation methods and service procedure for each type.

The article in this week's issue tells about the development of the soda fountain, and describes in general the various types of mechanical refrigeration systems which have been used in fountains. It also gives an outline of the information which will be presented in future instalments.

By Arch Black and Dean C. Seitz

Before discussing the various designs of the equipment used to dispense ice cream to the consumer it is to the point to outline briefly how ice cream is manufactured.

The product, as manufactured in the United States, contains few or many constituents, usually butterfat,

### Where Cream Is Frozen

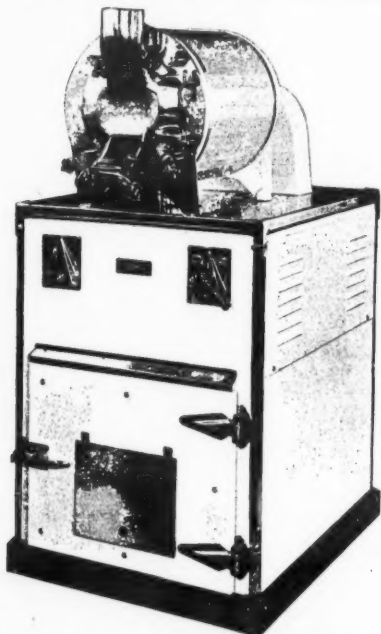


Fig. 1—The refrigerated jacket or "freezer" unit in which ice cream is frozen. This is a Mills unit used in a counter-type ice cream freezer.

serum solids, sugar, gelatin, and various flavoring ingredients.

The ingredients are mixed and pasteurized by heating at about 145° F., and the "mix" as it is then known, is either homogenized or viscolized. A homogenizer (or viscolizer) is a high-pressure pump which forces the mix through small orifices, and breaks up and disperses the fat globules. This method produces an ice cream with a smoother

texture and prevents the churning of the fat into butter in the freezer.

The freezing takes place in a refrigerated jacket known as the "freezer." (See Fig. 1.) In later articles a more detailed description will be given of counter-type freezers, such as may be serviced by independent companies, but for the present the freezer may be described as a cylinder surrounded by a cold flowing brine or by vaporizing refrigerant. During the freezing, the mix is whipped by dashers and the inside of the shell is scraped by scraper blades to remove the ice cream from the walls as rapidly as it might freeze.

When the initial freezing and whipping are finished, the mixture is still in a semi-fluid condition and contains sufficient air to increase the volume 80 to 100%. The partially frozen mixture is then drawn into containers such as cans or paper cartons, and the freezing is completed in hardening rooms where it is held at temperatures from -5 to -25° F.

From the hardening rooms, the ice cream is transported today by mechanically refrigerated trucks to the retailer who may have an ice cream dispensing cabinet or soda fountain.

### MECHANICALLY REFRIGERATED CABINETS INTRODUCED

Between 1922 and 1925, electrically refrigerated ice cream cabinets received universal acceptance as the proper method of storing ice cream for resale. The ice cream cabinet ultimately made it possible for the customer to buy ice cream at a cheaper price; it eliminated the excessive delivery cost occasioned by the use of salt and ice, it eliminated the muss of ice and salt for each retailer.

### MECHANICALLY REFRIGERATED SODA FOUNTAIN FOLLOWS

With the ice cream cabinets accepted by the trade, it was a short step to the mechanically refrigerated

soda fountain. The ice cream companies which had previously been required to deliver ice and salt to their customers for the storage of the ice cream, had been perfectly willing to deliver ice for cooling of the water used on ice and salt soda fountains. It was only natural that when the ice cream companies purchased ice cream cabinets which did not require ice and salt they would strenuously object to delivering ice to their customers for the cooling of the plain water and soda water required at the fountain.

The market for mechanically refrigerated soda fountains had been created and the fountain manufacturers were not slow to grasp the opportunity of providing their customers with the newly developed mechanically refrigerated systems.

In the early days of ice cream cabinets the refrigeration in the cabinet was produced by means of an evaporator commonly known as the "boiler." (See Fig. 2.)

In the ice cream cabinet the boiler was installed in a copper tank and the tank in turn was filled with brine. The soda fountain manufacturers

### 'Boiler'



Fig. 2—Type of evaporator known as "boilers" which were used in early-model fountains.

could purchase for their own use at that time only such evaporators or boilers as were being used by the ice cream cabinet manufacturers. As a result, the first designs of mechanically refrigerated soda fountains utilized the same boilers that the ice cream cabinet manufacturers were using in their own cabinets.

### THE BOB-TAIL FOUNTAIN

In some metropolitan areas, principally in New York City, several localized soda fountain assemblers conceived the idea of building a unit which could be installed alongside a standard ice cream cabinet to form a combination which served the purpose of a soda fountain. (See Fig. 3.)

The idea that occurred to these assemblers was to construct a small unit in which bottle cooling, water cooling, and syrup jar refrigeration could be produced by means of ice. This unit could then be installed beside a standard electric ice cream cabinet. The combination was known as a 50% soda fountain.

What this really meant was that the soda fountain was 50% mechanically refrigerated. The ice cream cabinet was mechanically refrigerated but the bob-tail which was attached to it was not mechanically refrigerated. The term "bob-tail" was applied to that section made by these assemblers and the term still persists in the industry.

Although even today many "bob-tail" fountains or dispensing units, as they are sometimes now called, are still manufactured, by far the great majority of them are now mechanically refrigerated. When means of mechanically refrigerating the "bob-tail" was developed, the

### A 'Bob-Tail' Soda Fountain

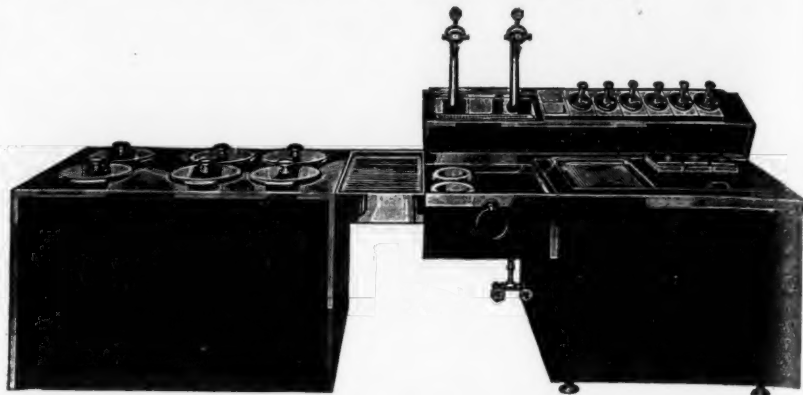


Fig. 3—A "bob-tail" fountain, with the soda fountain unit placed alongside a separate ice cream cabinet. These were popular in the early days of mechanically refrigerated equipment.

### 'Bain Marie' For Luncheonette Work

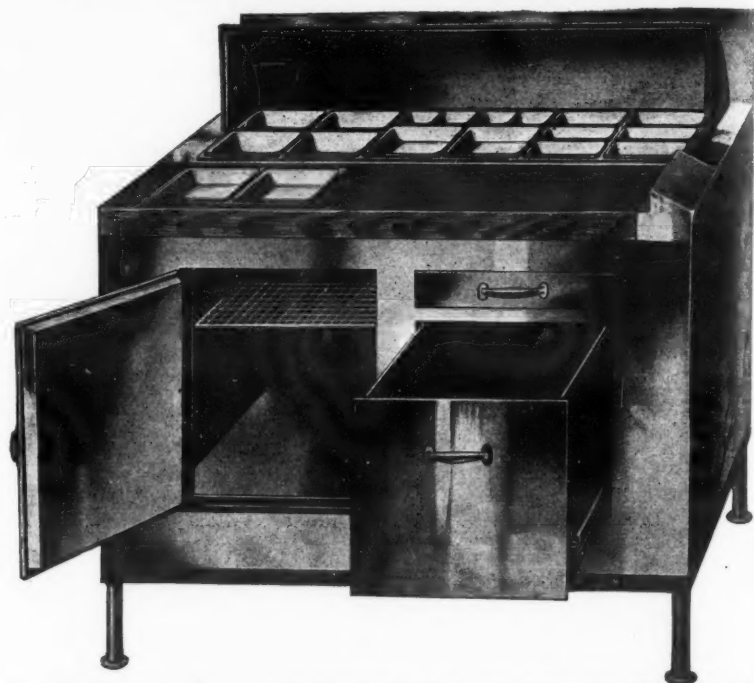


Fig. 4—As drug stores and luncheonettes got into the food serving business, the above-pictured piece of equipment, generally known as a "Bain Marie," was installed to store and preserve foodstuffs.

### Back-bar For Soda Fountain Installation

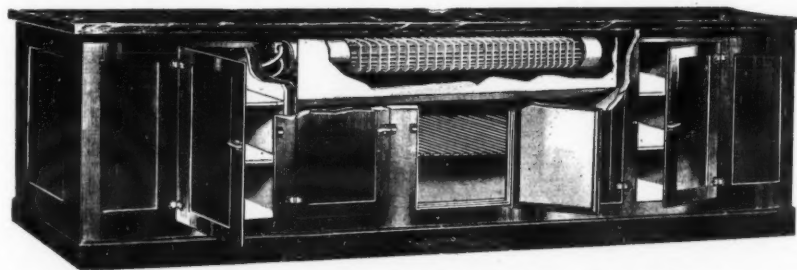


Fig. 5—"Back bar" for a soda fountain set-up. The cut-away view shows interior arrangement and placement of the coil.

soda fountain was then called a 100% fountain.

### SODA FOUNTAIN DEVELOPMENT

The soda fountain as we think of it today is a unit varying in length from the smallest which is approximately 6 feet long, to the largest installations which may be as long as 100 or 200 feet.

The original soda fountains as they were developed by the major manufacturers, shortly after the advent of mechanical refrigeration, were built in lengths of 8, 10, and 12 feet. These sizes of soda fountains were sold in large quantities to the drug store, the confectionery store, and such like.

In addition to refrigerating and storing ice cream, bottled beverages, syrups, and providing cold plain and soda water, it became necessary for the soda fountain manufacturer to provide refrigerated sandwich preparation tables frequently called "Bain Maries" (see Fig. 4) together with refrigerated back bar base sections (see Fig. 5) to store and preserve the wide range of foodstuffs which are served at the fountain.

The fixture which holds the ice

cream, cools the city and soda water, and refrigerates the bottled goods and syrups, is usually called a "creamer unit." (See Fig. 6.) This unit together with the refrigerated sandwich preparation table and refrigerated back bar base are the three refrigerated fixtures with which we will concern ourselves.

### THE CREAMER UNIT

That section of the soda fountain in which the ice cream is stored is quite similar to an ice cream cabinet, except that it is built as an integral portion of the creamer unit. Space is provided for bulk ice cream in 2½ and 5-gallon cans, as well as a separate compartment for packaged ice cream (brick) or other ice cream confections such as popsicles, eskimo pies, etc.

Soda fountain manufacturers expect that the greater proportion of the bulk ice cream dispensed at the soda fountain will be eaten on the premises. On the other hand the greater percentage of the brick ice cream sold at the soda fountain will be carried out.

Thus a colder temperature is provided for the brick ice cream than for the bulk ice cream. The bulk ice cream must be at the proper dipping consistency to eliminate the hard work for the soda jerker in trying to scoop ice cream that is hard as a rock.

The usual temperature range desirable for dipping ice cream is from 5 to 10° F. The exact temperature desired frequently hinges upon the ease of dipping. Since ice cream can be dipped more easily at 8 or 9° F. than at 5° F. it is frequently true that girl fountain dispensers demand higher bulk temperatures than the men.

(Concluded on Page 11, Column 1)

## Exacting Production

The individual analysis tag on every Ansul cylinder is but final evidence of the scientific checking that has followed every step in the production of Ansul chemicals.

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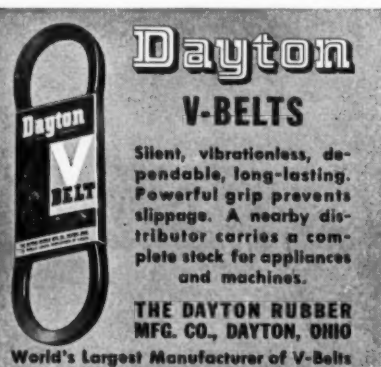
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### Anaconda Copper Refrigeration Tubes



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FRENCH SMALL TUBE BRANCH  
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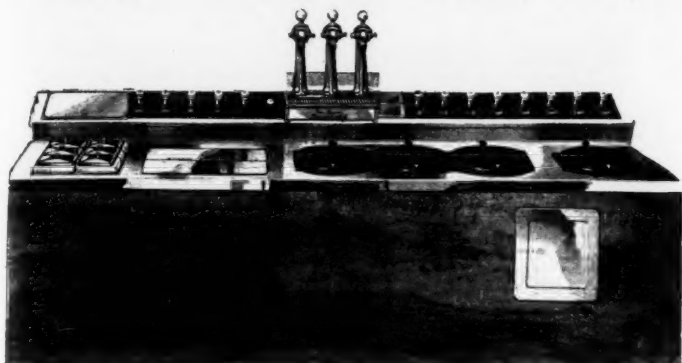
**'Creamer Unit'—The Modern Way**

Fig. 6—The "creamer" unit, a complete fixture which holds the ice cream, cools the city and soda water, and refrigerates the bottled goods and syrups. Most of the present-day soda fountains are of this type.

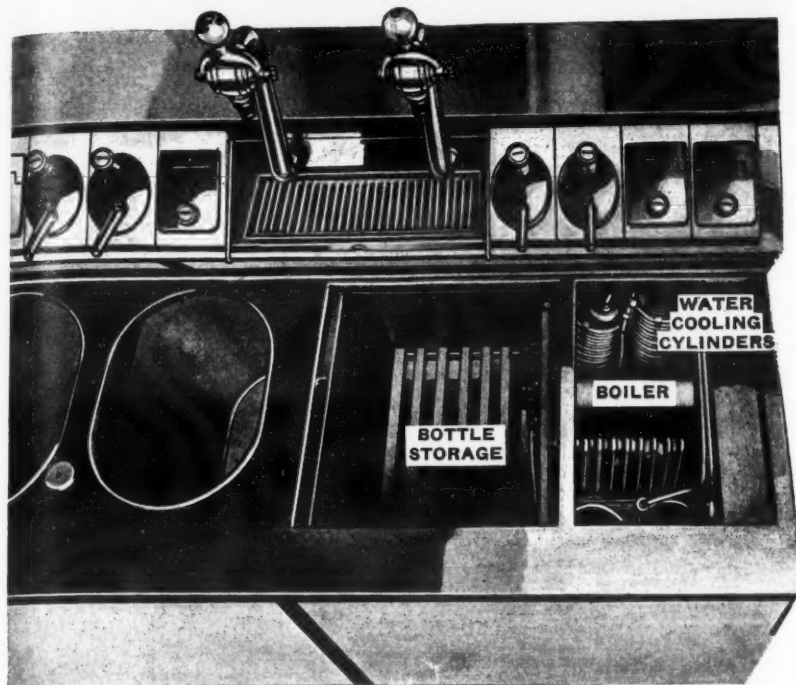
**Water-Cooling Section of Fountain**

Fig. 7—The "water-cooling" section of an early-model soda fountain. Note the use of the second boiler, located in a sweet water bath, by means of which the plain water and soda water were cooled.

**Soda Fountain Unit Had Many Changes**

(Concluded from Page 10, Column 5)

Usual temperature maintained in the packaged goods compartment where the brick ice cream and ice cream novelties are stored is from minus 5° F. to plus 5° F. There is no definite temperature requirement for this compartment. It is merely desirable to hold it at a colder temperature than the bulk ice cream for the carry-out trade.

The refrigeration of the ice cream storage section of a creamer unit has followed the same lines of development as its corresponding counterpart, the ice cream cabinet. The first ice cream storage sections were refrigerated by installing a boiler in a brine tank containing either alcohol or calcium chloride brine.

Improvements in the construction of the brine tank itself were made from time to time by the manufacturers. The most notable improvement was the stub brine tank construction.

Recently, some soda fountain manufacturers have used direct expansion coils immersed in a brine tank. Others have made their creamer unit brineless or "dry" by soldering or otherwise attaching the direct expansion coils to the inside lining of the ice cream storage compartment. Hook-up diagrams of these various methods will follow, indicating not only the hook-up, but also the method of operation as well as the service problems.

The water-cooling section of the fountain as it was developed in the early days of the mechanically re-

frigerated fountain, of necessity, made use of a second boiler such as was used in the ice cream brine tank (see Fig. 7).

This second boiler was located in a compartment containing a sweet water bath. An ice formation was permitted to form over the outside of the boiler. The plain water cooling coils and cylinders together with the soda water cooling coils and cylinders were immersed in the cold sweet water bath. Block tin lines were then run from these cooling coils and cylinders to the draft arms which were mounted on cast brackets installed in the syrup jar enclosure.

It was necessary to supply with each soda fountain a pressure-regulating valve installed in the suction line leading from the sweet water bath boiler. Its purpose was to give

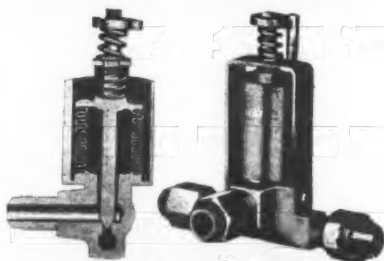
**Pressure Regulator**

Fig. 8—This pressure-regulating valve allowed the operator to control the amount of ice which would be allowed to form on the boiler used for cooling the water.

the customer a means of control over the amount of ice which would be permitted to form on this boiler (see Fig. 8).

Improvements have been made in the method of cooling both the plain and soda water. Some manufacturers have found that the use of electric motor agitators in the water bath has increased the heat transfer to the point that a boiler immersed in a water bath will provide all of the cold water necessary for the average soda fountain.

Still others made use of direct expansion coils immersed in a water bath, either with or without a motor-driven agitator. These various methods in refrigerating the water will be shown diagrammatically in combination with the corresponding methods of refrigerating the ice cream. The valves used, their

settings, and adjustments will be covered.

The third refrigerated section of a creamer unit is the jar enclosure. This is invariably located across the top of the fountain. In this jar enclosure the syrup jars and water draft arms are installed. In the early days this compartment was frequently refrigerated by metallic contact with the cold brine of the brine tank.

Later methods employed several unusual refrigeration systems, such as the liquid syphon system and the regenerative system. Thermostatic expansion valves with bare tubing evaporators were sometimes employed.

The fourth section in the creamer unit is usually called the refrigerator or bottle storage compartment, and obtains its refrigeration by leakage into the adjacent refrigerated sections. The bottled goods compartment is usually located between the water-cooling section and the ice cream section. Sufficient refrigeration is provided for it by leakage into the brine tank and water bath compartments.

Sometimes the drier coil for the jar enclosure expansion circuit is extended into the bottle storage compartment. This is usually true when instantaneous coolers are used for the water cooling.

**Gustaf Berg Dies**

BRIDGEPORT, Conn.—Gustaf A. Berg, Glyptol sales representative for the General Electric Co., died suddenly on Oct. 18 in his home in Monroe, Conn. Mr. Berg had been with G-E at Bridgeport since 1922.

**A.S.R.E. Convention Will Have Departmental Conferences For the First Time**

(Concluded from Page 1, Column 4) dinner-dance. Special parties for women guests are to be arranged.

Following a meeting of the A.S.R.E. Council on Dec. 5, technical sessions will get under way at 10 a.m. Dec. 6 in the hotel's west ballroom. Air conditioning will be the topic of the first session.

**CONDITIONING SPEECHES**

"Air Pollution and Climate," will be discussed by David R. Morris of the New York Meteorological Observatory, New York City; "Air Conditioning with Chemical Dehumidification," will be presented by Stewart E. Coey, Research Corp., New York City; "The Present Status of Hospital Air Conditioning" will be outlined by Dr. Albert G. Young, medical director of Corey Hill hospital, Brookline, Mass.; and "The Possibilities of Gas Storage in the United States" will be given by Prof. R. M. Smock, Cornell University, Ithaca, N. Y.

After the welcome luncheon at 1 p.m., departmental conferences will begin about 3 p.m. in parlors A, B, and C of the hotel.

At the conference on quick freezing, Ralph Jenkins of the New York State Agricultural Experiment Station will discuss vitamin preservation; Milton Kalischer will open discussion in the air-conditioning conference with a review of the role of humidity in air conditioning and refrigeration; and at the conference on market research, David L. Fiske

will lead discussion with a paper on the trend of refrigeration toward food producing areas.

Refrigeration in industry will keynote the second day's technical session, opening at 10 a.m.

"Trends in Compressor Design" will be presented by H. C. Guild of Vilter Mfg. Co.; "Air Conditioning at Low Temperature in Aircraft Engine Laboratories" will be discussed by John R. Monsell of the U. S. Navy's aircraft factory, Philadelphia; "Metal and Asbestos Ducts in Air Systems" will be outlined by R. H. Hellman of the Mellon Institute, Pittsburgh; and "New Developments in the Use of Ultra-Violet Light in Food Storage" will be discussed by Arthur W. Ewell of Worcester Polytechnic Institute.

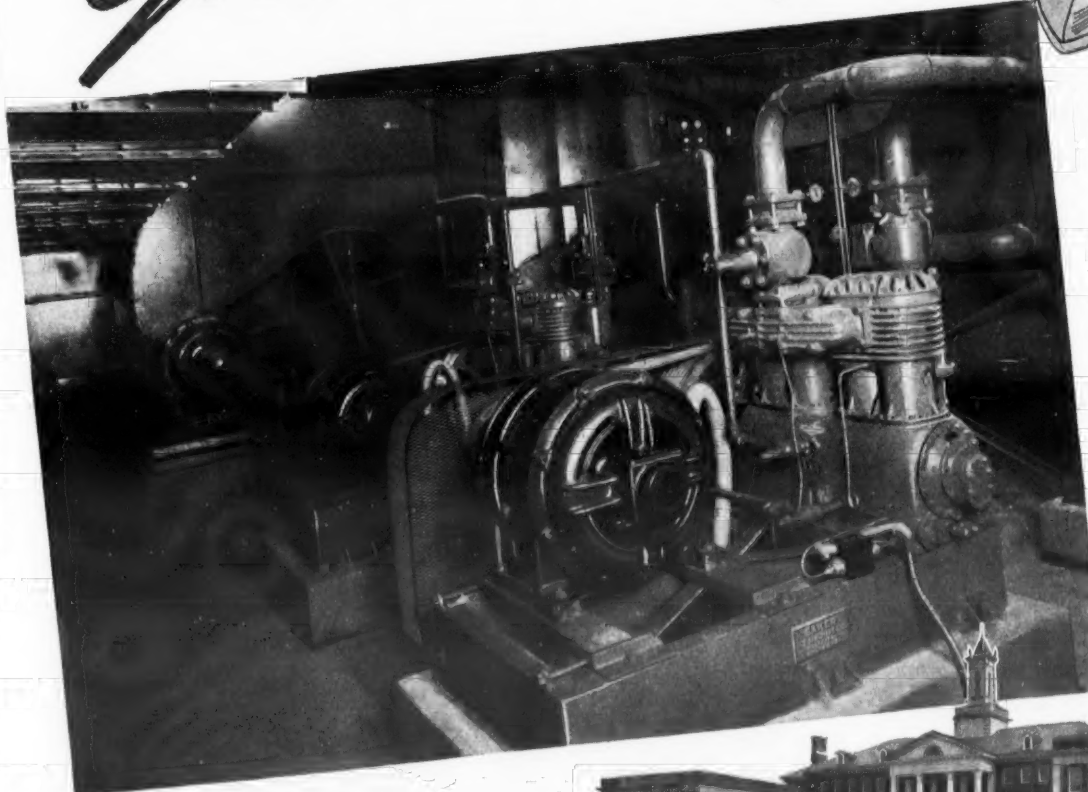
**FINAL SESSION**

Final technical session, to open at 10 a.m. on Dec. 8, will have as its topic the matter of foods and commercial refrigeration.

"Refrigeration Requirements in the Wine Industry" will be outlined by G. L. Marsh of the University of California, Berkeley, Calif.; "Refrigeration, Bacteria, and Beverages" will be the subject of a paper by Max Levine of the University of Iowa, Iowa City, Iowa; and "Food Freezing Temperatures" will be discussed in a paper prepared by Dr. H. C. Diehl of Seattle, Wash., which will be presented by Nels Rosberg, Los Angeles.

# AIR CONDITIONING

## Goes to College



40- and 50-ton Baker ice machines in University of Omaha building installed by Baker Ice Machine Company, Omaha, Nebraska. Texaco Capella Oil "D" in use.



Recently completed building of University of Omaha, where Texaco Lubricants are in use... including Texaco Capella Oil, Texaco Marfak, Texaco Motor Oil.

WHEN THE UNIVERSITY OF OMAHA opened this fall, the buildings were equipped for complete air conditioning... the first university in the U. S. to be wholly air conditioned.

The new plant at Omaha consists of one 40-ton and one 50-ton ice machine, both built and installed by the Baker Ice Machine Company, Omaha, Nebraska. These Baker machines, which are using "Freon" as a refrigerant, are lubricated with Texaco Capella Oil "D."

There's freedom from trouble for the plant's

superintendent in Texaco Capella Oils... freedom from reaction with this or any other refrigerant, freedom from breakdown, from moisture.

You, too, can enjoy freedom from trouble by switching to Texaco Capella Oils.

Trained lubrication engineers will help you make a sound selection, and 2186 Texaco warehouses assure prompt deliveries wherever you are. Write the nearest, or address:

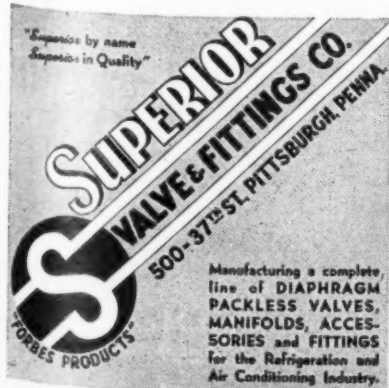
The Texas Company, 135 East 42nd Street, New York City.



Texaco Dealers invite you to tune in The Texaco Star Theatre—a full hour of all-star entertainment—Every Wednesday Night—Columbia Network—9:30 E.S.T., 8:30 C.S.T., 7:30 M.S.T., 6:30 P.S.T.

# TEXACO Capella OILS

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## Commercial Refrigeration

### Holdover Plate-Type Truck Cooling Unit Developed By McFarlane & Mills

CHICAGO—A refrigeration compressor driven by a small air-cooled gasoline engine and connected to a series of holdover plates comprises the new system of mechanical cooling developed by H. McFarlane & Co. in collaboration with Mills Novelty Co. for use in commercial trucks and trailers. A 1-hp. Mills condensing unit completes the system.

An outgrowth of Mills' experience in developing refrigeration systems for the ice cream industry, the new truck system is said to have a capacity of approximately 6,000 B.t.u. per hour, and to be capable of maintaining temperatures as low as 28° F. against outside temperatures of 95° F., provided the truck or trailer is fitted with the customary 2 or 3 inches of commercial insulation.

Zero temperatures required for the transportation of quick-frozen foods may be obtained with this system by simply increasing the thickness of the insulation to approximately 6 inches. To maintain these temperatures in trucks having only the usual 2 or 3 inches of insulation, it would be necessary to practically double the amount of refrigeration, according to estimates made by Mills engineers.

Cost of maintaining this temperature over a 10-hour haul is about 60 cents, it is claimed. Cost of entire equipment for a 20 x 22-foot trailer is said to be about \$600.

The holdover plates to which the compressor is connected are mounted in the ceiling of the truck body. Amount of holdover solution in the plates is such as to give the equivalent of four hours of compressor operation. In other words, should anything happen to the mechanical operation of either the compressor or the gasoline engine, it would be four hours before the temperature inside the body would vary enough to injure the load, the engineers claim.

The entire system is manually controlled. A dial thermometer is mounted in the front of the trailer in such a position that the driver can at any time observe the inside temperature of the truck. The gasoline engine is set at a constant speed recommended by the manufacturer, and the pulley arrangement is worked out so that the engine drives the compressor at the proper speed.

When refrigeration is required in the trailer or truck, the gasoline engine is started. It remains running until the driver stops it. Thus, the driver is responsible for maintaining the proper temperature in the truck.

First of the trailers equipped with this new system was put into operation on a run from Chicago to Fort Wayne, Ind. Following satisfactory test runs, the unit was used on longer hauls to Cleveland and other points in Ohio, handling fresh meats for a large Chicago packing house.

### 100% Porcelain Display Cases In Production At Midwest Mfg.

(Concluded from Page 1, Column 4)  
duty, three-shelf delicatessen models; and 10 and 12-foot single-duty meat display models.

In addition to being constructed of porcelain, inside and out, models in the new line will have composite steel and wood construction, full thickness Balsam Wool insulation, efficient coiling and baffling, triple-plate glass of the anti-fogging type, and hard rubber doors of latest design, Mr. Battles reports.

In spite of general business conditions, Midwest's commercial refrigerator cabinet business up to Sept. 1 was 85% better than for the corresponding period last year, Mr. Battles reports. By the end of the year, he says, the company expects its commercial business to be 100% better than for 1937.

Midwest also had made an encouraging beginning in the circulating oil heater industry with its one model, introduced earlier this year, reports C. E. Bullock.

Some of the larger merchandising companies, such as Marshall Field's in Chicago, and Macy's in New York City, and wholesale hardware companies have begun handling the heater line, he says. In Florida and some of the warmer climates, homes are being built around these heaters by means of a closet arrangement built in the center of the house, with doors similar to venetian blinds to let the hot air filter out the top and the cold air enter at the bottom, heating as many as six or seven rooms, Mr. Bullock reports.

### Dough-Retarder's Aid To Baker Told By Puffer-Hubbard

MINNEAPOLIS—Advantages accruing to retail bakers through the use of an electric refrigerator for dough-retarding work are outlined in a letter recently sent to bakers by Puffer-Hubbard Mfg. Co., manufacturer of commercial refrigeration equipment, over the signature of A. L. Goetzmann, manager.

Used in bakeries turning out pastries, cakes, pie crust, coffee cake, bun doughs, and certain cookie and cake doughs, the letter points out, a dough-retarder unit makes possible the following accomplishments:

Finished goods are lighter, fluffier, flakier, stay fresh longer, and their flavor is improved.

Two or three day's supply can be mixed at one time, and in the day time.

A supply of the bakers' most profitable items can be kept, ready to bake off at any time—6 a.m. or 6 p.m. No "all out" sign on these items need ever be posted.

Loss from "left-overs" is eliminated; so is loss from stale goods.

Night work, formerly necessary, can be greatly reduced, or in some cases cut out entirely.

The baker need never again pay for overtime work.

Most important, the dough-retarder refrigerator, through the extra earnings it makes possible, is quickly self-liquidating. One baker says, "It will pay for itself in eight months," the latter states.

### 19 Appliance Dealers In Milwaukee Show

(Concluded from Page 1, Column 1)  
general show committee. Alvin Van Antwerpen of Radio Specialty Co. was general vice chairman.

Appliance exhibitors included: Atlas Radio Stores, Barton Corp., Droegkamp-Inghram Co., Electro-Plance Distributors, General Electric Supply Co., Greusel Distributing Corp., Ische Brothers Radio Co., Meyer Home Appliance Co., Morley-Murphy Co., Modern Appliance, Inc., National Enameling & Stamping Co., Noll Piano Co., Radio Specialty Co., Schuster's Department Stores, Singer Sewing Machine Co., The Milwaukee Electric, Railway & Light Co., Charles Turnock Co., Westinghouse Electric Supply Co., and Taylor Electric Co.

### Temprite Announces New Water Cooler For Bottlers

DETROIT — Temprite Products Corp. has augmented its line of cooling equipment with a bottling plant water cooling system designed to provide bottlers of carbonated beverages with a sanitary, efficient, and economical refrigerated water supply.

Principle of the Temprite system is that of instantaneous cooling, which means that the water is cooled as it is used, eliminating the use of large storage and cooling tanks.

Water is first passed through a main unit of Temprite coolers, in which its temperature is reduced to 40°, a desirable temperature for controlled carbonation. These coolers are provided with the same hourly capacity as that of the bottling machine, so that the flow of water through them is constant so long as the bottling machine is in operation.

#### SMALL STORAGE TANK

The ordinary carbonator, however, operates on a cycle, taking in water at a fairly rapid rate for an interval and then remaining idle until the charge of water has been used up.

To provide for the rapid filling of the carbonator when it is drawing in its charge, without changing the uniform flow of water through the Temprite, a small storage tank is provided between the unit and the carbonator. Capacity of this tank, according to Temprite engineers, should be equal to the entire water-holding capacity of the carbonator.

In regular operation, the water flows into the tank from the cooler at a constant rate, and the level of water in the tank rises and falls as the carbonator cycles. Storage tanks should be insulated with at least 2 inches of insulation, but no cooling coils are required, it is claimed. When continuous flow carbonators are encountered, it may be possible to eliminate the small tank.

#### AUTOMATIC VALVE

In order to permit air to flow into the tank when the water level is lowering, and to shut off the water when the tank becomes full, it is equipped with a Temprite air relief valve, No. 852. Operation of the valve is comparable to that of a float valve in an open tank, but permits the tank to be of the closed type. The valve is automatic in operation.

A male end on the valve, threaded at the top, provides a convenient means of attaching an air cleaner or purifier.

Water line between the main unit of Temprite and the small storage tank is equipped with a water regulating valve and a thermometer. Purpose of the valve is to permit regulation of the rate of flow of the water so as to conform to the capacity of the cooling units and the demand of the bottling machine.

Due both to the agitation of the beaters in the carbonator and the leakage of heat into the carbonator, an increase in the temperature of the water supplied to the carbonator occurs during the process.

#### SECONDARY UNIT

This may be anywhere from 5° to 10°, depending upon conditions, and normally causes a fluctuation of temperature at the bottler. In most cooling systems, water is cooled below 40° to offset this temperature rise. The Temprite system employs a secondary cooling unit, installed adjacent to the bottling machine, by means of which the heat picked up or generated in the carbonator is removed, and the water is delivered to the bottler at exactly 40°, assuring constant temperature for both bottling machine and carbonator.

This secondary unit is small in size, compared with the main cooling unit, and on some models is assembled as an integral part of the main cooler. Secondary cooling coils are constructed of monel metal, to preserve the purity of the water.

Operation of the system is said to be particularly well suited to the bottling plant's requirements. In the morning, about 15 minutes before bottling operations are to be started, the cooling system is turned on and water permitted to run through it. First batch of water is permitted to

run through the entire system, including the carbonator, to insure proper chilling of all parts.

Gas is then turned on to the carbonator, and operation thereafter is automatic. Main battery of cooling units will feed water at a constant rate to the storage tank. Water level in the storage tank will rise and fall as the carbonator takes in its charges of water, and a constant supply of cooled water will be fed both to the carbonator and the bottler, without necessity of holding large quantities of water in refrigerated storage.

Ability to adjust itself to shut-downs, frequent in the bottling business, is claimed as a feature of the Temprite system. Cooling operation will stop automatically as soon as the flow of water is stopped, due to the filling of the storage tank and the closing of the air relief valve.

Cooling units will, however, maintain their temperatures during the idle period, it is claimed. Water in the carbonator will warm up slightly, but the secondary cooling unit will offset this rise. Restarting of the bottling machine places the cooling system in operation again.

#### STANDBY LOSSES CUT

Standby losses also are reduced to a minimum by use of the system, it is claimed, since the system's flexibility permits it to be operated when and as required, and since the system runs only when the bottling machine is in operation.

System layout is simplified, it is claimed, since the units need not be insulated when operated in ordinary room temperatures. Large storage tanks also are eliminated, adding to economy of operation of the system. Further operating cost reductions are claimed, due to the fact that Temprite's direct heat transfer permits the condensing unit to operate at highest possible back pressure. Therefore, it is said, capacity of the condensing unit may be as much as 50% greater than if it were operating at the low back pressure as required for other types of systems.

In connection with the introduction of its new bottling plant cooling system, Temprite has sent to bottlers of soft drinks throughout the country a new booklet "More Gallons Cooled Per Dollar," describing the system.

Temprite dealers also are being supplied with layout and list price specifications, as well as with a "bottling plant questionnaire" to be used in contacting bottlers regarding their cooling requirements.

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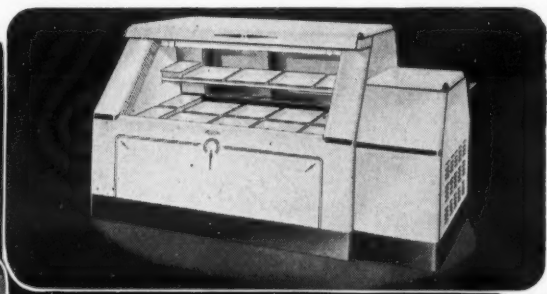
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## THE BUYER'S GUIDE

**The NEW  
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## Stoker News

### Billig Sees Premiums as Unnecessary, Says Stoker Buyer Pays For Them Anyway

OREGON, Ill.—"Someone must pay for any premiums that are offered to induce stoker sales volume," says Hal Billig, vice president and general manager of Kol-Master Corp., in discussing "free coal" and "reduced price coal" offers being made by stoker dealers in some parts of the country.

"Price cutting and the giving of premiums in order to make stoker sales—or the sales of any other product—have always seemed to me to rank in the same class. Neither is good business, and both result in unjust expense either for the dealer or for the ultimate consumer," Mr. Billig states.

"If the price of the stoker is boosted to cover the cost of the premium, the consumer pays; if the premium is included in the retail price of the stoker, then the dealer pays."

"In either case, an injustice is being worked—an injustice which, in the case of the consumer, at least, has been recognized by the Wheeler-Lea bill and the Federal Trade Commission."

"If the dealer handles a really good product, it should be unnecessary to resort to premium offers in order to make sales. The consuming public has never objected to being

sold a high grade piece of merchandise," Mr. Billig continued.

"Dealers should consider this when selecting the stoker they want to handle, and should also consider the effect of high-pressure selling on their retail following."

"The stoker industry is comparatively new, of course, and new industries sometimes require exceptional methods for introducing themselves to the public."

"Nevertheless, it appears that the present wave of price-cutting and premium giving among stoker dealers will have an inevitable and perhaps a permanent ill effect upon the merchandising system and financial condition of the stoker industry," Mr. Billig states.

Mr. Billig asserts that from his personal experience he has learned that if a dealer conducts his stoker sales on a strictly businesslike basis, he ultimately will profit far more than he will if he resorts to the use of premiums and price cutting.

Stating the policy of Kol-Master Corp. with respect to premiums and "free offers," Mr. Billig states that the company "has not used premiums or other similar tactics in promoting its business, and has discouraged such practices among the company's dealers."

### Godfrey Named Whiting District Sales Mgr.

HARVEY, Ill.—George L. Godfrey of Elkhart, Ind. has been appointed manager of Whiting stoker sales in the north and west sections of the country, according to a recent announcement by H. G. Erstrom, sales manager of the stoker division of Whiting Corp.

During the last 12 years Mr. Godfrey has been associated with the merchandising of Frigidaire, Kelvinator, and Bendix home laundry appliances. For a time he also was sales manager of Rackliffe Bros. Co., Kelvinator distributor in New Britain, Conn.

Mr. Godfrey was appointed to his present post to succeed J. M. Knox, who was fatally injured in an automobile accident early in September.

### Anchor Co. Establishes Chicago Branch

CHICAGO — Encouraged by a steady increase in sales this year, Anchor Stove & Range Co. of New Albany, Ind. has opened a branch office at 59 W. Wacker Drive here.

The complete line of Anchor stoker models is on display, including residential and industrial models in a full range of sizes.

Other products displayed by the Anchor company are two new oil-fired space heaters, a stoker-fired space heater, and a new streamline steel range.

### New Link-Belt Unit Has 'Load-Signal'

CHICAGO — A new model commercial stoker, designed to burn bituminous coals and handle 3,500 sq. ft. of radiation, has been announced by Link-Belt Co. here.

Designated as No. 15, the new unit is entirely enclosed, the front compartment of the hopper housing the fan, motor, transmission, and automatic air control mechanism.

The shear pin on the transmission is equipped with a "Load-Signal," which announces when the pin shears, should an obstruction get in the feed tube.

Burning head of the new stoker is the "Power-Flex" type, having laminated tuyeres with primary and second air ports.

With this design, an active fuel bed is maintained over practically the whole area of the furnace, with consequent higher efficiency and capacity, it is claimed. The new tuyeres are designed to burn both low-fusion, non-caking bituminous coals and high fusion caking and coking coals. Flexibility to meet various boiler conditions is secured by the use of various length tuyeres.

### Sales School Started

TOLEDO—The Toledo Retail Coal Merchants Association has launched a combustion school patterned after the domestic coal and stoker salesman's school conducted early this year by Appalachian Coals, Inc., at Cincinnati.

### Great Lakes Coal Co. To Handle Conco Line

ST. PAUL—Great Lakes Coal & Dock Co. here has been appointed distributor for the complete line of Conco automatic coal stokers in the Minnesota and western Wisconsin territories.

The new stoker department will be under the direction of L. F. Poirier, who has been associated with the stoker industry for seven years. His most recent connection was with the Nelson Plumbing & Heating Co. of Detroit.

J. O. Thompson has been appointed manager of the company's retail department.

### Lewis Named Sales Manager Of Detroit Stoker Firm

DETROIT—J. E. Douglass, general manager of Auburn Stoker Sales & Service Co. here, has announced the appointment of C. H. Lewis as sales manager.

Mr. Lewis was formerly associated with the R. L. Spitzley Co., Delco-Frigidaire distributor, and with the Frigidaire branch here.

### To Handle Westinghouse

CHATTANOOGA, Tenn.—Southern Furniture Sales Co. has been named distributor in this territory for Westinghouse Electric & Mfg. Co.'s complete line of electrical merchandise.

### Electric Institute Offers Shovel To Capital Housewives To Show Stoker's Function

WASHINGTON, D. C.—Offer of a free coal shovel was the bait dangled before the public in order to secure names of prospects for automatic heating equipment in a campaign sponsored by the Electric Institute of Washington during September.

Forty thousand electric bills, mailed during the month, enclosed return postal cards featuring the shovel as an "extra lightweight housewife's special." Provisions were made for the distribution of 1,000 of these shovels to owners of hand-fired coal furnaces returning the card.

Although announced as extra lightweight, the shovel actually was quite substantial in size.

Accompanying the electric bill and return card was a small bill enclosure in two colors, entitled "The Hand That Held The Shovel . . . Takes A Rest!" Principal appeal of the folder was the automatic fea-

tures of the heating equipment, keyed to the slogan "One Finger Fires Your Furnace," and the cleanliness which would result from the installation.

The shovels were distributed by salesmen of Institute members, the requests being allocated among members on a fair basis. This gave the salesman an opportunity to discuss with the prospect the benefits of an oil burner or stoker installation. Distribution of the shovels was limited to owner-occupied dwellings still using an old-fashioned hand-fired furnace.

Exhibit facilities of the Institute were devoted to automatic heating from Aug. 29 to Oct. 15, and it was estimated that a total of 60,000 people would see the products. Show windows around the Institute building also featured the advantages of low-cost automatic heating.

### Anthracite Industries Holds Sales Schools In 20 Key Cities

NEW YORK CITY—In the belief that the best time to apply new merchandising ideas is during the coal burning months, officials of Anthracite Industries, Inc. have announced that evening classes of its merchandising school will be formed in 20 key cities this fall and winter.

Starting with an evening school which opened in Providence, R. I. on Oct. 3, meeting two evenings weekly for a period of six weeks, the schedule of cities to be covered will permit many stoker dealers to attend the merchandising course.

Other schools scheduled during the remaining months of 1938 are: Boston, opening Oct. 4; Springfield, Mass., Oct. 17; Albany, N. Y., Oct. 18; Syracuse, N. Y., Oct. 31; and Buffalo, Nov. 1.

The work of enrollment and follow-through in each city will be in charge of the local Anthracite Industries representative. Heating contractors and stoker dealers will receive invitations to enroll.

An outline of the course includes these subjects: anthracite as a fuel; draft and combustion; figuring heat losses; heating systems; air conditioning (winter); service water equipment; boilers and furnaces; thermostats; stoker principles and performance; commercial stokers; and merchandising methods.

### Two Booklets on Soft Coal Stokers Prepared

WASHINGTON, D. C.—Bituminous Coal Research, Inc. announces publication of two booklets dealing with studies on underfeed stokers and stoker coals, to be released shortly.

One deals with "Fundamentals of Combustion in Small Underfeed Stokers," and the other is headed "Performance of Several Types of Bituminous Coals in Small Underfeed Stokers."

The first publication will contain 80 pages, with drawings, graphs, and photographs dealing with studies and investigations undertaken by the bituminous coal industry's research specialists.

The second will describe the combustion of several types of bituminous coal of different burning characteristics and features of small stokers, in relation to the best results with different varieties of coal.

### Sidles To Distribute Whiting Stoker Line

OMAHA, Neb.—Sidles Co. has been appointed a distributor in this territory for the complete line of Whiting stokers and allied products, announces H. G. Erstrom, sales manager of the stoker division of Whiting Corp., Harvey, Ill.

Norman Schwartz will be in charge of stoker sales for the Sidles Co.

## THE BUYER'S GUIDE

### The New PEERLESS DUAL UNIT COOLER

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The new Peerless Dual Unit Cooler is longer and lower in height than the standard models and this feature results in two important installation advantages over single fan types where large capacity coolers are required.

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Type "G" Controls may be furnished with Ranco's proven overload element. A pilot circuit contact is optional.

Write for Bulletin.

**Ranco INC.,**  
Columbus, Ohio, U.S.A.

# New Technique For Frosted Foods Work Gains Spotlight At Food Conference

## Tennessee University To Build Immersion Freezer For Commercial Applications

KNOXVILLE, Tenn. — University of Tennessee's engineering experiment station, working with Tennessee Valley Authority experts, will build and sell machines for the quick freezing of fruits and vegetables, it was announced during the Food Preservation Conference held Oct. 20 and 21 at the university.

Construction of the machine is to be completed by next spring, and tests will be made at that time at Cleveland, Tenn. The machine quick-freezes produce by the immersion method, and will be an enlarged version of a model with which the Tennessee experiment station has been making tests.

The proposed unit for commercial freezing will have a capacity of 1 ton of frozen products an hour, as compared with the present experimental

machine's capacity of 500 pounds an hour.

"We believe that our freezing principle is a superior one, as indicated by ready market acceptance and comments of users," stated R. Brooks Taylor of the engineering experiment station.

"By the new process we are able to freeze the product very rapidly, yet at not too low a temperature, and thus the ice crystals which form are very small and do not break down the cell walls of the product."

Mr. Taylor, in a talk before the Food Conference, described the construction of the machine and the experiments with it as follows:

"Based upon reports of research conducted by others, particularly Dr. J. G. Woodroof, we came to the conclusion that there were two principles of fundamental importance: (1) extremely low temperatures affect the quality of the product adversely; (2) the rate of freezing is very important, the better product being produced by the most rapid freezing, other things being equal. Early in our experience we found that we could not depend upon great temperature differentials to obtain high velocity freezing in order to retain the characteristics approaching those of the fresh, unfrozen commodity."

"We believe in the principle of preserving a commodity in substantially the same condition in which it was started from the fields. We do not believe in the wisdom of freezing strawberries and the like with added sugar, but have come to the conclusion that the public will buy strawberries as they come from the fields and will be in a position to add the necessary sugar required in a mix which is to be served on the table at home or institution, or for ice cream or preserve manufacture."

### ITEMS 100% USABLE

"Sugar itself is not a perishable commodity, and a large proportion of the frozen foods have been packed with certain percentages of sugar, upon which percentages expensive cold storage and transportation costs for perishable commodities have been necessary."

"If, however, one buys individually quick-frozen strawberries, peaches, youngberries, or the like, he buys only those items which are 100% usable, and will not be committed to the purchase of sugar which can be bought locally for about 5 cents a pound."

"It is our opinion that, with the possible exception of the demand by preserve manufacturers, the need will be for individually quick-frozen products. Since we have determined by laboratory experiment that the individually quick-frozen products produced by the immersion method have considerable advantages over others with which we are familiar, we are continuing our research along this line. As to whether or not this is true only the consumer public will determine."

### TEMPERATURE AND TIME

"Products should be frozen as quickly after harvesting as possible, and they should be gathered when they display a degree of maturity and ripeness suitable for consumption."

"Now if we are to obtain high velocity freezing and still avoid extremely low temperature this can be accomplished only by rapid heat transfer, which in turn is possible only by freezing the smallest individual particle which is to be marketed."

"For example, in the freezing preservation of strawberries, the smallest particle is the individual strawberry, or perhaps slice of strawberry, from which the heat might be extracted at relatively high temperatures, by intimate contact with a circulating refrigerant solution."

### 0° F. IS BEST

"We found by experiment that a strawberry immersed in such a circulating refrigerant solution would freeze very rapidly even though the temperature of the solution was not below 0° F. We selected the temperature of 0° F. as critical because it is generally accepted that frozen foods may be stored in freezing storage warehouses most successfully at that temperature."

"Any temperature to which the product is subjected in the original quick-freezing operation above 0° F. results in inefficiency, slower freezing, and larger ice crystals, whereas temperatures below 0° F. result in depreciated quality, the degree of which is dependent upon the degree below 0° F. to which the product is subjected."

"The average U. S. No. 1 strawberry can be frozen in a circulating brine solution at 0° F. in 5 minutes. Obviously a chloride brine solution would be unsatisfactory for the freezing of strawberries and other fruits. It therefore became necessary to develop a solution especially suitable for this purpose."

"We first tried a solution of sucrose but found that even at 10° F. its viscosity was entirely too great

## Frozen Foods Make Another Bid

About eight years ago, at the turn of the decade, quick-frozen foods made a sensational but ill-timed splash in the food world.

The technique of processing and distributing the foods was not yet perfected, and that fact plus the Depression put a quietus on the quick-frozen foods movement until the past year, when a slower but surer process of evolutionary development began, bringing it to a place of prominence in the food world, and opening up a vast new market for refrigeration equipment.

Much of the discussion at the recent Food Conference, held by the University of Tennessee with the cooperation of the American Society of Refrigerating Engineers, was concerned with various phases of the quick-frozen foods business. Reports of some of these discussions are published on this and the following page.

to be satisfactory, though we froze a number of experimental lots in such a solution at that temperature. There are certain advantages in using a sugar solution, one of which lies in the fact that the solution itself is an edible product which would be approved under the pure food laws.

"To overcome the difficulties encountered with the sucrose solutions we developed a special sugar solution which contains approximately 57% solids and of these solids approximately 10% are sucrose, 54% levulose, and 36% dextrose. This solution has a freezing point below 0° F. and has a low viscosity, approximately 500 centipoises at 5° F."

### OPERATE AT -10° F.

"The concentration of this solution is such that it is on the water side of the eutectic. It is thus possible to operate the coils in the freezing machine at a temperature of about -10° F. and sometimes lower. If the temperature of this solution gets too low, ice will crystallize around the coils, thus reducing the rate of heat transfer. This causes the temperature of the solution to rise to a point where the ice melts and the solution returns to normal."

"If our concentration were increased so that we were on the other side of the eutectic, low temperatures would cause the precipitation of dextrose, with the result that the operation must be discontinued and the entire solution heated to approxi-

mately room temperature in order to cause the dextrose to be redissolved."

The circulation of the solution is a relatively important problem as the pumping equipment must be very efficient, and there are comparatively little data available anywhere covering the subject of pumping sticky, viscous fluids, declared Mr. Taylor.

### TYPE OF MACHINE USED


"Having gone this far with our research," continued Mr. Taylor, "we constructed a small machine using four aluminum fin coolers and circulating the solution with a propeller directly driven by a motor at approximately 1,400 r.p.m. We used Freon-12 as the refrigerant and with this machine froze a large number of different commodities, including several varieties each of corn, beans, peas, strawberries, blackberries, raspberries, and other commodities."

"There were many problems, mechanical and theoretical, which were apparent and which had to be solved in order to make the process practicable, and we have spent the last two or three years in overcoming the difficulties which would normally arise in the commercial application of this process."

"We have constructed a larger machine of entirely different design for the purpose of producing semi-commercial quantities in order to determine the public acceptance of the product and also in order to gather sufficient engineering and practical data from which a com-

(Concluded on Page 15, Column 1)

## THE BUYER'S GUIDE

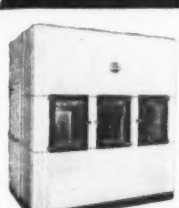


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HERE'S something entirely new in tube benders. An Imperial hand tube bender that will not only handle all types of bends but you can easily form round and obround coils with it. Furnished in four sizes for 3/8", 1/2", 3/4" and 1" tubing.

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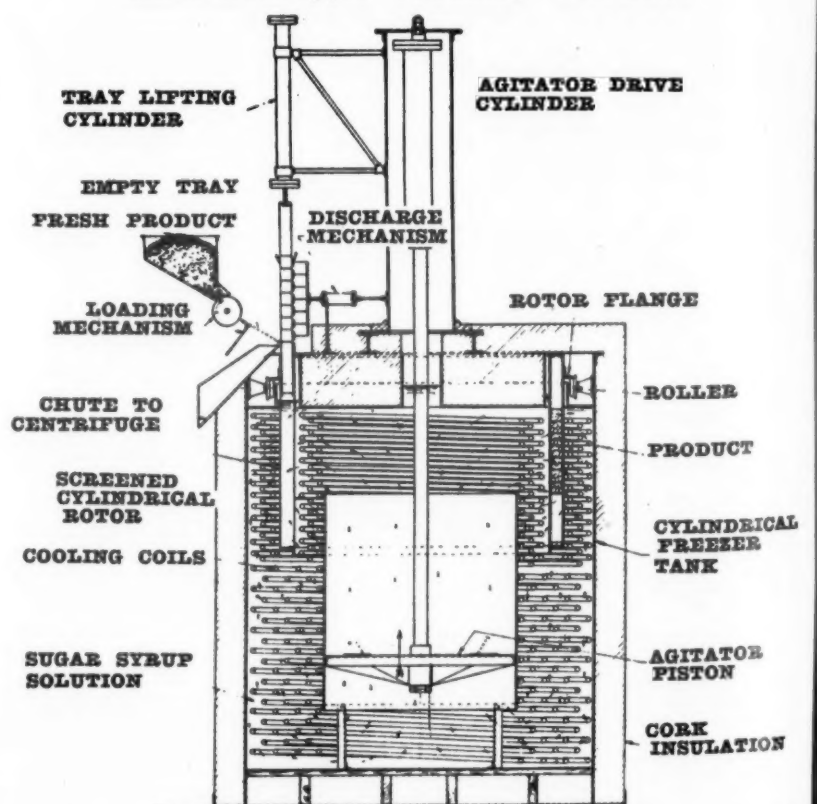
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VALVES • FITTINGS • TOOLS • CHARGING LINES • FLOATS • STRAINERS • DEHYDRATORS

## Immersion-Type Freezing Machine



Sketch of the machine for the quick freezing of fruits and vegetables which will be produced by the University of Tennessee in cooperation with the TVA. Refrigeration will be furnished by a mechanical system.

Every facility of Servel's vast factory is available to meet your refrigeration needs, whether large or small.



## SERVEL

Refrigeration And Air Conditioning Division, Evansville, Ind.

Write For Servel, Inc., Electric

## 'Concentrator' Has Important Function In New Quick-Freezing Machine

(Concluded from Page 14, Column 5)  
mercial machine might be intelligently constructed.

"This pilot plant machine was set up in our freezing laboratories at Cleveland, Tenn. It consists of a Monel lined steel tank approximately 6 feet in diameter and 6 feet deep.

"In the center of the tank is a Monel metal cylinder 42 inches in diameter and 45 inches tall located with the bottom of the cylinder 12 inches from the bottom of the tank. Inside this center cylinder is a piston which operates up and down causing the solution with which the tank is filled to circulate in both directions as the cylinder is operated.

"Small valves are provided on the piston which permit some leakage on the downward stroke so that the solution moves in one direction farther than it does in the opposite direction, thus gradually completely circulating the solution and avoiding pockets of high or low temperatures.

### BANKS OF COILS

"Banks of coils are provided between the center cylinder and the tank wall. Space between the banks of coils is provided for a double squirrel cage which is made of a special type of screen and which rotates intermittently.

"Into the squirrel cage fit six specially designed Monel metal trays which carry the product to be frozen. The trays are suitably guided into the squirrel cage and permit easy flow of the solution around the fruit to be frozen and they are so designed that they are automatically loaded and unloaded in a few seconds.

"With the machine in operation the center piston causes the circulation of the solution through the coils, the product to be frozen, and other coils alternately, thus permitting only an extremely slight rise in temperature of the solution after passing over the fruit. The machine is operated by hydraulic transmission and has a capacity of 500 pounds per hour.

### COMMERCIAL NEXT

"It is of course understood that this machine was not intended to be of commercial design but it has served its purpose well in providing the necessary data by which we may design a commercial machine and such a design is in progress at this time.

"Our new machine will be very simple and will provide for continuous circulation by a new style pump now made available by one of the manufacturers. There will be very few moving parts and the entire installation having a capacity of 2,000 pounds of U. S. No. 1 strawberries per hour and will occupy a space 12 feet by 16 feet by 8 feet high, including the compressors.

### FREEZING COSTS

"In our Cleveland, Tenn., laboratories we carefully metered the electrical current and the water and made very careful cost analyses and our cost of freezing was shown to be 29 cents per pound of strawberries. Our new machine of course should be much more efficient."

There were other problems in freezing by immersion which had to be solved, Mr. Taylor pointed out. It is necessary to maintain the freezing solution in a relatively uniform condition with respect to purity and specific gravity.

### CONCENTRATION LOWERED

It was found that the concentration of the solution steadily became lower and lower at a rate depending entirely upon the nature of the commodity to be frozen. For example, in the freezing of youngberries which are very fragile and the juice of which runs out of the fruit in the normal handling before reaching the freezing machine, the concentration is lowered by the juice and any water which may adhere to the fruit flowing into the machine with the fruit and while this rate is very slow it nevertheless is real.

It becomes necessary therefore to maintain the concentration of the solution to the proper degree either by the addition of solids or concentration by evaporation. The former method is impractical because the solids will not readily dissolve at the

temperature of the solution in the machine and therefore the latter method was adopted.

A small unit was devised which becomes a part of the machine and which will maintain the concentration of the solution automatically. The first unit was found to be much more elaborate than necessary and it was found that by using a basket type boiler under a vacuum of approximately 26 inches the solution could be controlled automatically to any degree required.

The vacuum for the concentrator is provided by the water from the compressors which, when run through a special aspirator, is found sufficient to provide the proper degree of vacuum. The vacuum makes the feeding of the concentrator automatic and simple and at the same time greatly lowers the temperature of the concentrator as it is operated at approximately 130° F.

### STEAM HEATER

The solution from the concentrator is fed back to the tank through a very small electric pump and a water-cooled heat exchanger. The heat for the concentrator is steam which may be provided by any ordinary steam boiler as only 10 pounds pressure is required.

Also designed was an electric steam concentrator using three phase current with three electrodes directly immersed in a dilute electrolyte. It is completely automatic since the steam pressure, when it reaches the proper amount, forces the electrolyte completely below the electrodes, automatically breaking contact therewith and resuming operation when the steam pressure lowers to the point where the solution is permitted to contact the electrodes.

### SOLUTION REMOVED

One of the most important features of this method of freezing is the removal of the solution from the product after it is withdrawn from the machine, said Mr. Taylor.

This is accomplished by means of a semi-continuous, completely automatic centrifugal which removes practically all of the syrup from the product without damage to either. If the solution is allowed to remain on the strawberries for example, it will gradually settle to the bottom of the container and will cause the juice of the berries to be drawn therefrom until the concentration of the solution is reduced sufficiently to freeze solid at the temperature at which the product is stored.

However, if approximately 1% is allowed to remain after centrifuging, this solution will remain as a coating on the product, thus reducing the possibility of adverse effects of oxidation.

### PACKAGING PROBLEM

"One of the biggest handicaps to the successful development of the quick-freezing industry is the matter of packages. The type and style of containers which may be used in this industry are of fundamental importance. It is the speaker's opinion that packaging costs in this field are entirely too high.

"We designed our cartons so that a single shipping case could accommodate eight 1, 2½, or 5-pound cartons, thus standardizing on the size of the shipping case. We did put up some in one other size case this year due to the special demand from a buyer in New York.

### SINGLE SIZE BEST

"However, we feel that a single size container is very desirable because it stacks well in the warehouse, makes possible easy arrangement for air circulation, and a cheaper unit cost of the original container.

"We tested solid fibre and both single and double wall corrugated containers and found that the corrugated containers were not strong enough to support the weight that might be stacked upon them in the warehouse.

"We therefore used 140-point solid fibre containers with a corrugated liner which proved satisfactory as these were actually stacked nine high in our 0° F. refrigerated barge which recently delivered its cargo to St. Louis."

## Separate, Sealed Liners Called Proper Way To Package Frosted Foods

KNOXVILLE, Tenn.—Solution of the moisture-vapor penetration problem in the packaging of frozen foods by use of separate, independently sealed liners rather than by an attempt to make the cartons themselves air tight and moisture proof was advocated by R. M. Bergstein, Interstate Folding Box Co., Middleton, Ohio, when he addressed the recent Food Preservation Conference at the University of Tennessee here on the "Packaging of Frozen Foods."

"A carton or box of some kind is necessary," Mr. Bergstein reminded his listeners, "to produce the desired rigidity and mechanical requirements. But because of the presence of exposed cut edges and the difficulty of securing an air-tight seal (regardless of the container's shape or construction), the use of the carton alone has proven inadequate.

### RECTANGULAR PACKAGE

"The next move, therefore, was in the direction of a plain, rectangular boxboard carton used in combination with a separate, independently sealed liner. Such a package, which could be shipped in flat form, with the resulting economy in freight charges and reduction of required storage space, seemed to be the most logical.

"The shape of such containers is a matter of great importance. Low-temperature space is expensive space, and it is therefore essential from a standpoint of economy that the package should permit maximum utilization of the space in which it is stored.

"A rectangular-shaped package has many inherent advantages over a round container. For example, one test showed that 174 rectangular pint packages could be stored in a refrigerated locker which could hold only 96 round pint containers. Another reason for the economy of the rectangular cartons is the fact that round containers necessitate a greater freezing capacity due to the air gaps between packages.

### OUTER CONTAINER

"In regard to the outer container, the most widely used stock at the present time is a bleached sulfite lined groundwood back sheet. Two reasons for the use of this board can be given—it is made entirely from virgin materials (thus lessening the possibility of any board odor), and it is well adapted to paraffin treatment without discoloration.

"It is quite possible, however," stated Mr. Bergstein, "that with improvements in protective coatings and lacquers it will be possible at some future time to use a somewhat less expensive grade of board for the outer container.

### WAXING PROCESS

"The coating or waxing process used on the surface of the outside container also is a matter of considerable importance. Not only must the coating be water repellent, so that the sheet does not become weakened when condensation occurs, but it must be more flexible than ordinary paraffin, which has a decided tendency to become brittle and crack under low temperatures.

"More important still, however, at least from a protective standpoint, is the inner liner," the speaker declared. "This may be in the form of a separate bag which is packed either previous to or after being inserted into the outer carton, or a sheet which is interleaved (on special machines available for this purpose) into the locks of the carton blank.

"Some containers available provide pre-formed liners within the carton, so that when the carton is squared up the liner is also squared up and ready for filling.

### TWO CHIEF FACTORS

"Regardless of which of these forms the liner may take, the question of vital importance is the selection of the proper sheet and the proper seal. It is on these two factors that the proper protection for the foods during freezing and storage depends.

"The trend in liner materials has been very decidedly toward heat-sealable coatings, as this method of sealing is both simple and effective. Most widely used base sheets or papers for liners can be grouped under three headings—cellophane,

parchment, or sulfite and other papers.

"As none of these sheets is in itself moisture proof, each must be coated with some material possessing these three primary qualifications: a maximum degree of moisture-vapor transmission resistance; ductility, or flexibility at low temperatures; maximum heat-sealing strength.

"Because cellophane is so extremely thin (the most widely used sheets being less than one thousandths of an inch in thickness) the amount of coating that it can carry is limited, and for that reason the general trend has been toward parchment or sulfite papers with a heavier coated film.

"As paraffin alone does not possess the necessary qualities, many coatings are compounds of waxes with either synthetic resins or rubbers. One of the most successful approaches to this problem has been the use of a double coating, a base coat of rubber and a secondary coat of wax.

### DUPLEX COATING

"This duplex thermoplastic coating retains the heat-sealing properties of the rubber and the moisture resistance of the wax. When a sheet coated in this way is sealed by heat, the two base coatings are fused to each other through the secondary coating, providing a strong and dependable seal.

"The actual sealing process itself also has been the object of considerable study," Mr. Bergstein explained.

"The usual heat and pressure devices are not dependable, due to the fact that the application of positive pressure tends to squeeze out the molten coating material from the seams.

"The sealing unit in one of the most successful methods developed

thus far is so constructed that a narrow band of curvature is applied across the flat mouth of the bag. Effect of this curvature is to provide contact under tension yet without positive pressure. When the heat is applied, a tight seal is effected between the opposite mouth of the walls.

"This same process is used in forming the seams of the liners at the time of manufacture. In addition to providing an assured hermetic seal, this method allows for internal expansion either in the atmosphere or the product itself, without damage to the seal.

"Accurate comparisons of the relative merits of packages for frozen foods can be obtained by weighing the packages to be tested on a fine balance over a period of time to check the relative moisture loss and to determine in this way which package prevents to the greatest degree the dehydration of foodstuffs.

"An accelerated test can be made by using calcium chloride or other hygroscopic materials, checking the gains in weight instead of the losses."

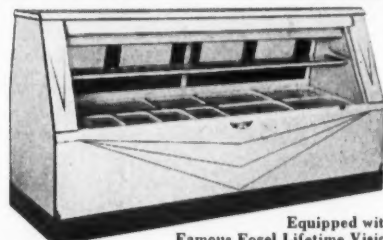
In regard to the production phase of packaging in the freezing plant, Mr. Bergstein expressed the opinion that small, portable, semi-automatic packaging units are to be preferred over the larger, completely automatic, but far more expensive stationary equipment.

### PORTABLE UNITS

Reasons for this conclusion, he pointed out, are that the machinery is idle during a great part of the year because the freezing season is so short, and—more important—the smaller units lend themselves more readily to the extreme flexibility needed in any freezing plant because of the variety of products handled.

Prime points to be considered in the relations between frozen food packaging and marketing, Mr. Bergstein concluded, are adaptability of the carton to the outer wrapping frequently used to designate the brand name, and simplicity of opening, to facilitate use of the product.

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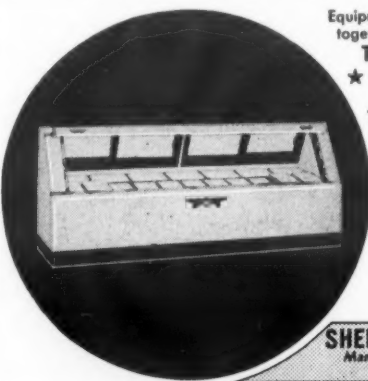
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